Inaugural Address
ON THE
HISTORY OF EPIDEMIOLOGY IN ENGLAND.

Delivered at the opening of the Session 1893–94 of the Epidemiological Society of London on Nov. 15th,

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GENTLEMEN,—In taking the chair of this Society for the second time I thought that it might be of interest to collect some notes relating to the history of the science with which our Society concerns itself. I make no pretension to relating the history of epidemiology, but only wish to bring before you some few episodes illustrating the rise and development of the science in our own country. The conception and even the name of a science of epidemic diseases began long before with Hippocrates, and his treatise bearing the name of the Epidemics, has been consciously or unconsciously the model of much that has been written since. The seven books thus named contain, indeed, many things not bearing on epidemics, but we find, especially in the first and third, which are regarded as the only genuine books, the two essential features of epidemic science: firstly, an account of the prevalence of certain diseases in particular seasons and their supposed relation to weather and climatic influences; and, secondly, clinical histories, as we should now call them, of the illnesses of particular patients. Under the first heading comes the description of certain states of the weather and of diseases in particular seasons. Each of these states is called by a name (*καταστασις*), which was afterwards rendered "epidemic constitution," and each appears to give the history of the asonal peculiarities of a particular year. Here we have undoubtedly the germ of the idea so prevalent in later writers of a particular *epidemic constitution* impressing a special character upon the diseases of the season in which it prevails, or, again (though this is a more modern idea), favouring the occurrence of particular diseases. The accurate records of individual cases contained in this work have always been celebrated, and we can only regret that this feature of the writings of Hippocrates was so little imitated by later writers on the same theme. I show you an edition of the "Epidemics" brought out by Freind, the historian of medicine, in 1717.[1] This work of the father of medicine was copiously annotated by Galen, who valued it very highly, and it always maintained a high reputation; but I cannot now follow the development of the doctrines of Hippocrates in Greek or Roman, or even in early mediæval times. We must plunge at once into that part of medical history which concerns our own country.

Mediæval medicine, as we see it first beginning to emerge from obscurity in the thirteenth and fourteenth centuries, offers the greatest possible contrast to the spirit of the age of Hippocrates. I need hardly remind you that such medical knowledge as then existed was a tradition derived chiefly from the Greek and, in a very small degree, from the Latin medical writers, but transmitted through the literature of a totally different race—i.e., the Arabs. Ancient medicine was known in the early Middle Ages only in an Arabian dress. The fathers of Greek medicine, unknown in the original, were read in Latin translations of Arabic works, which were themselves translations or compilations from the Greek. Moreover, such medical science as existed was wholly traditional. Original observation or the record of first-hand experience did not exist. It seems to have been impossible for men to record natural facts and appearances as directly observed by their own faculties—at all events, it was practically impossible for the physicians. When they wrote about disease it was merely to put down what Galen, Avicenna, or Razes, or their translators—Constantine, Johannitius, and the rest—had laid down on the subject. They never ventured to set their own experience against the dogmatic teaching of the authorities. They were often conscientious, no doubt, and thought that they were serving the cause of truth better by accurately copying the dicta of the ancients than by trusting to their own experience, which was limited, or to their own senses, which might possibly mislead them. This was as true of anatomy and of botany as of practical medicine. Such inordinate respect for authority is certainly not to be found in any of the writers of antiquity, and we can only explain its prevalence in mediæval Europe by a transference to science of the conception of infallibility which was always associated with theology. Whether it was also true of the Arabians, who also possessed an infallible written dogma, I am unable to say. With reference to our particular subject, this slavish habit of mind had, however, one very unfortunate consequence—viz., that it prevented mediæval physicians from making any direct observations which might serve as the basis of a science of epidemics. It is true that they were acquainted with certain diseases not known to the ancients, among which small-pox and measles were the most conspicuous. Many mediæval writers, including the earliest English physicians whose works have been preserved—viz., Gilbertus Anglicus and John of Gaddesden—have left descriptions of these two diseases, and it is interesting to see how they described them. When we look into their descriptions carefully it is difficult to believe that they were founded on actual observation. The symptoms, the causes, and the treatment are given in almost identical language by a whole school of writers who we find on examination have transcribed them almost literally from the Arabians, especially from Razes. Grüner published in 1790 a valuable collection of the passages of these writers referring to small-pox and measles, but omitted to quote from Gilbert.[2]

Gilbert, as the earliest English medical writer whose works can be certainly identified, deserves, therefore, a little consideration. A notice of his life may be found in the "Dictionary of National Biography." His chief work, "Compendium Medicinæ," exists in two editions printed abroad and in MS. copies, of which I am able to show you one to-night.[3] It was never printed in England, and it does not seem to have been translated into English. It is a systematic Latin text-book founded on Arabian writers and their copyists. His chapter on small-pox and measles is important, because it seems to have been made use of by later writers, especially by the better known John of Gaddesden. We find here the original indication of Gaddesden's celebrated cure of a royal prince infected with measles by wrapping him in scarlet cloth and surrounding him with scarlet hangings. It must be confessed, however, that the original idea can be traced much further back, to Avicenna in fact, who says that red objects have the power of attracting the heat out of the body. Gilbert makes a clear distinction between small-pox and measles; nevertheless, one feels some doubt, as I have remarked before, whether this distinction is based on his personal experience. John of Gaddesden was the author of a very popular Latin work called "Rosa Anglica," which was twice printed on the Continent, though never in this country, and is not known to have been translated into English.[4] His account of small-pox and measles is much like that of Gilbert, but it is remarkable that he quotes the English name "mesles" in his Latin treatise, though in a somewhat ambiguous sense. He does not refer to any distinctive epidemics of this disease, nor does he quote any cases except the one of the royal prince already referred to, so that it is impossible to call either his work or that of Gilbert in any sense a valuable contribution to epidemiology. All that we can make out with certainty is that both were acquainted with one or more eruptive diseases, producing red spots or pustules, giving rise to irritation, and likely to leave permanent marks. These they describe traditionally as variolæ and morbilli; but it should be borne in mind that the traditional character of their description is no proof of the absence of direct observation. These two writers are the chief representatives of mediæval medicine in England, as the celebrated John Ardern was of mediæval surgery, and there are others whose works still exist only in manuscript; but it must be confessed that up till the sixteenth century we have no direct observations either on epidemics or of sick persons which can supply any material for a knowledge of the diseases of that period.

We must pass on, then, to the time when medicine began to be once again, as it was in the days of Hippocrates, objective,

[1] Hippocrates on Epidemic Diseases: De Morbis Popularibus. Edited by John Freind. London, 1717.

[2] De Variolis et Morbillis: Fragmenta Medicorum Arabistarum, &c. Edidit C. G. Grüner. Jenæ, 1790.

[3] Gilbertus Anglicus: Compendium Medicinæ. Folio MS. on vellum. Fifteenth century.—The same work. Printed edition. Lyons, 1510.

[4] John of Gaddesden: Rosa Anglica. Folio. Venice, 1516.

real, and descriptive. European medicine, from the sixteenth century onwards, begins to deserve this character; and, in the first place, the question suggests itself, How did the change thus characterised come to be effected? The true answer to this question would be a long one, but briefly we may say that men got out of the habit of slavish respect for written authority, not by neglecting that authority, but by studying it more profoundly. It was the revival of Greek medical literature in the original which, strange to say, brought medicine back to the study of nature. The extraordinary stimulus given by direct study of Greek scientific writers is shown by the fact that those who revived the study of anatomy, like Vesalius, or the study of botany, like Fuchs and Matthioli, and many others were Greek scholars. They studied Galen and Aristotle without adoration indeed, but not without the deepest respect. So it was in England in the case of the learned Greek scholar, John Caius, an enthusiastic student of Galen, who first gave an original description of a disease which he had observed himself, uninfluenced by tradition, and where, indeed, he had no traditional authority to guide him. Caius is well known as having described one of the great epidemics of the sixteenth century, the last outbreak of the sweating sickness. On this subject he wrote two books—one in Latin, the other in English. The latter, entitled "A Book or Counsel against the Disease commonly called Sweat" and published in 1552, though exceedingly rare, has often been quoted; but the Latin treatise "De Ephemera Britannica" is, from a medical point of view, much more valuable. I am able to show you copies of both.[5] The Latin book, intended for the profession, contains a good description of the symptoms of the disease, from which I will read a short extract, and will venture to give it in English: "Those whom the disease attacked it tormented in the following way. In some it first seized upon the neck or the shoulder, in others the leg or the arm. Some had a feeling like spirits or warm breath running through their limbs. Along with this, and without any cause apparent to those who were unfamiliar with the disease, a profuse perspiration broke out. The internal parts were first of all warm and afterwards burning, while the heat spread to the external parts of the body. Terrible thirst and restless tossing about followed. The heart, liver, and stomach also suffered from the disease. After all this there succeeded severe headache, with senseless muttering delirium; then drowsiness, and an almost unconquerable desire to sleep, for this disease possesses some virulent poison derived from bad air, which infuriates the mind and then overcomes it with sleep. On the other hand, in those cases in which the sweat was restrained in the first instance there were slight shivers, but afterwards, when the perspiration broke out, it was of a bad odour and colour, differing according to the kind of humour, sometimes scanty, sometimes abundant, but always thick in substance. Some suffered from nausea and some from vomiting, but very few did so, and for the most part only those who had been recently eating. In all the breathing was laboured and rapid, and the voice hollow. If you felt the pulse it was excited and rapid. These were the certain signs of the disease." Whatever we may think of this as a complete clinical picture it is certain that no such direct objective account of any disease had before this been written in England. From Caius we also get some account of the date and extent of the several epidemics of the "sweat," but in this particular he is not more valuable than the lay chroniclers. Haeser, who has reprinted most of the tracts on the sweating sickness, justly places that of Caius in the first rank. I have here a tract on the "sweat" printed in Germany,[6] with which it may be compared. Even in the sixteenth century Caius stands almost alone as a recorder of epidemic disease. Dr. Creighton has, however, made the interesting discovery in the British Museum of a manuscript account in English of the sweating sickness of 1485 by a French physician, Thomas Forrestier, resident in England, and he has given extracts in his important work, the "History of Epidemics." I have also found in the British Museum one other epidemiological record—a manuscript by a physician named Brandon, of whom little more can be discovered than that he was a medical man, which also furnishes some genuine, though scanty, contributions to epidemiology. Here we find for the first time "annual observations" of diseases, though unfortunately they are very meagre. One very remarkable observation made in the year 1579 I must quote. It is that of an epidemic gangrene, "gangrena endemica." Brandon says that in Worcestershire and Gloucestershire, towards the end of winter, many lost their limbs by this disease. Some were affected in their hands, but more in their feet; and then he promises to give an account of the "mores et processus" of the disease, but unfortunately at this point the manuscript breaks off. The great importance of this record, however, is that we have here a definite account of what was evidently an epidemic of ergotism—a disease which has always been recognised as being very rare in England, and which has even been thought not to have been observed till the eighteenth century. Brandon also gives observations on epidemic dysentery in 1597 and on the plague of 1603. This leads me to speak of writers on the plague in general.

The number of publications relating to the plague in Europe during the sixteenth, seventeenth, and eighteenth centuries is very large, those in German being probably the most numerous, while those published in England are comparatively few. We might expect, however, that those works published at the time of great epidemics would furnish us with valuable materials for epidemic history. It is very disappointing, therefore, to find how very seldom these writings, whether of Continental or English origin, have any historical value. What generally happened was this. When an epidemic broke out or was expected in any particular place some local physician thought it his business to furnish the public with a tract on the subject, and he accordingly compiled from the best authorities a pamphlet, bad or good, as the case might be. Such a physician, if he survived, would no doubt have afterwards acquired some experience of the disease during its continuance, and if he had chosen to put this down in plain words when the epidemic was over he might have done some service to medical history; but, unfortunately, when the disease had once disappeared the physician seemed to have lost all interest in the subject, and it is only in rare instances that the medical literature of the plague contains any account of contemporary epidemics. One exception is Guy de Chauliac's well-known account of the "Black Death" at Avignon; but we have nothing in English literature to compare with this at all till much later. The only medical work on "The Plague" in the Elizabethan times which has any value is that of Thomas Lodge, and this cannot be called original. I have brought with me a few similar publications of the seventeenth century and one of the fifteenth, but they are almost entirely destitute of originality.[7] It is not till after the great plague of 1665 that we have in the well-known work of Hodges[8] some attempt at a scientific description of the epidemic. Hodges has so often been quoted that I need not refer to him further, but I should like to mention the name of another medical writer who has left a work on this subject, still in manuscript, in the British Museum, which deserves to be better known. When I was writing the article on "The Plague" for the "Encyclopædia Britannica" I came across this treatise by William Boghurst, a London apothecary. It is called "Loimographia, or an Experimental Relation of the Last Plague in the City of London," by William Boghurst, Apothecary in St. Giles-in-the-field, London, 1666. It was evidently prepared for publication, but does not appear to have been printed. Either the printed edition has been lost or else Boghurst did not succeed in finding a publisher. This work shows, I think, a genuine power of observation, and it has the appearance of being perfectly veracious. Boghurst gives a view of the epidemic which does not altogether agree with that of Hodges, and which is in some respects much more rational. I have here a transcript of some of the most important chapters of the manuscript, from which I will read a few extracts.

This is Boghurst's preface to the reader:—

"Having collected a few scattered observations during my practize upon the plague which continued these eighteen months—viz., from the 7th of November, 1664, to the latter end of this May last passed,

[5] John Caius: A Boke or Counseill against the Disease commonly called the Sweate. London, 1552.—John Caius: De Ephemerâ Britannicâ. Louvain, 1556.—The same, reprinted. London, 1721.

[6] Nuenar et Riquinus: De Novo Morbo quem Sudorem Britannicum vocant. Cologne, 1528.

[7] Valastus de Tarenta: Tractatus de Epidemiâ et Peste. Mantua, circa 1483.—Orders against the Infection of the Plague, by Queen Elizabeth. About 1590.—Proclamation regarding the Plague, by Charles I. 1641.—Directions for the Cure of the Plague and for Preventing the Infection, set downe by the Colledge of Physicians. London, 1636.—The Same Directions. 1665.—Loimotomia, or the Pest Anatomosed. By George Thomson. London, 1666.—A Discourse of the Plague. By Gideon Harvey, M.D. 1665.—A Plain and Easie Method for the Plague. By Thomas Willis. London, 1691.

[8] Loimologia, sive Pestis Narratio. Authore Nathanael Hodges. London, 1672

1636, and some of my acquaintance being desirous to see them, considering that none hath printed anything either since this plague, or that forty years since (which I something wonder at), for those two or three bookes printed last yeare about the middle of the plague, or a little before, as Mr. Kemp's booke and Gideon Harveyes, Mr. Garencier's, and three or four other small things spoke nothing from experience. .... I have written nothing from hearesay or from bookes or from the testimony of others or my own conceit, but all and only from experience and triall; and I had one more advantage to doe this, being not at all fearfull, but rendering myself familliar to this dissease as to any other, whereas many because of their fearfullnesse came not to close practize, but stood shivering at a distance, and profitted the lesse both themselves and their patients, and commonly lost their lives to boot."

The signs of the disease are thus given:—

"*Diagnosticks.*—1. Shuddering cold at first falling sicke. 2. Frequent vomitting, or at least reaching to vomitt. 3. Headache, diziness, and lightnes of the head. 4. Heat and thirstinesse. 5. Bleeding at the nose and sometymes at mouth, hemroids, and mensis. 6. Stiffnes in the necke or flanke. 7. Great inward heat and outward cold. 8. Carbuncles, buboes, blaines, blisters, spotts, rising on the body. 9. Distraction, staring frenzy, idle talk. 10. Drowsiness and sometymes continual watching. 11. A livid countenance, inclining to blacke, also a frowning countenance, etc., etc."

Here we have some of the unfavourable signs:—

"Some other more generall observations proving fatall this plague: Almost all that caught this disease with feare dyed with tokens in two or three days. About the begining most men gott the disease with fadling, scorfetting, overheating themselves and disorderly living. Tokens appeared not much till about the midle of June and carbuncles not till the latter end of July, but were very rife in the fall about September and October and seized most on the old people, adult cholerick and melancholy people, and generally on dry and leane bodyes. Children had none. If very hott weather followed a showere of raine the disease increased much. If in the heate of the disease the winds blew very sharp and cold people dyed very quickly, many lying sicke but one day. Those that married in the heate of this disease (if they had not had the disease before) almost all fell into it in a weeke or a fortnight after it, both in city and in country, of which most dyed, especially the men."

The following observations on the spread of the disease are very interesting:—

"The winds blowing westward so long together from before Christmas until July, about seven months, was the cause the plague began first at the west end of the city as at St. Giles, St. Martins, Westminster. Afterwards it gradually insinuated and crept downe Holborne and the Strand and then into the city, and at last to the east end of the suburbs, soe that it was half a yeare at the west end of the city before the east-end and Stepney was infected, which was about the middle of July. Southwark, being the south suburb, was infected almost as soon as the west end. The disease spread not altogether by contagion at first nor began at only one place, and spread further and further as an eating spreading soare doth all over the body, but fell upon severall places of the city and suburbs like raine even at the first at St. Giles', St. Martin's, Chancery-lane, Southwark, Houndsditch, and some places within the city, as at Proctors' House."

The following passage gives Boghurst's view of the question of contagion:

"Great doubting and disputing there is in the world whether the plague bee infectious or catching or not, because some think if it were infectious it would infect all, as the fire heates all it comes neare; but the plague leaves as many as it takes, thus are they gravelled at such arguments and cannot solve their doubts; and Van Helmont thinks all people catch it by feare, and generally everyone is apt to judge by his experience, for if they have beene in never soe little danger and yet have escaped without catching it they presently think the disease not infectious; and if anyone may draw his conclusion from this I have as much reason almost as any to think it is not infectious, having passed through a multitude of continual dangers cum summo vitæ periculo, being employed all day till six clocke at night, out of one house into another, dressing soares, and being alwaies in their breath and sweate without catching the disease of any, through God's protection, and soe did many nurses who were in the like danger; yet I count it to be the most subtile infectious disease of any, and that all catch it not by feare, neither (though this doth much as Helmont thinks) for their children, and confident people would not have the disease, but we see many of them also have it, and children especially most of any."

This treatise is not altogether unknown. I am glad to see that Dr. Creighton has since made good use of it in his valuable "History of Epidemics in Britain" and has given longer extracts than I was able to do in the Encyclopædia. But I think it should be made known still more widely, and I take this opportunity of suggesting to this Society that to publish the whole or a great part of this treatise would be a valuable contribution to the history of epidemiology in England and a public service well worthy of the Society.

The seventeenth century, however, furnished more valuable contributions to medicine than its literature of the Plague. At this time or at the close of the preceding century begins a class of literature which, though humble in its origin, has developed into a valuable instrument for scientific research—I mean the science of medical statistics. These statistics, so far as England is concerned, began with what are called "The Bills of Mortality of the City of London," which originated perhaps in the times of the Plague and were probably first prepared for the information of the Government. It became the custom to publish every week a list of the numbers of persons dying of the plague and of other diseases.[9] They were issued by the parish clerks in the several parishes of London, but the materials on which they were based were furnished, not by the medical profession, but by a class of old women who were specially employed to view the body and certify the cause of death in every house where a death had occurred. These records were anything but scientific, and the strange names assigned to fatal diseases, such as "liver ground," "rising of the lights," &c., seem very quaint to us now. Nevertheless, it is in the bills of mortality that we find the first mention of at least one disease which only later became known to the profession—viz., rickets. From the year 1634 we find deaths ascribed to this cause, though it was not till 1645 that Whistler printed his Graduation Thesis at Leyden, and not till 1650 that the treatise of Glisson, generally regarded as the first on the subject (which I have here), was published.[10] We may therefore fairly say that the discovery of rickets was due, not to Glisson—though he first described the disease scientifically—or to any other physician, but to the old women and the parish clerks. The great importance of the bills of mortality, however, is that out of them have grown the invaluable statistics of disease which are now furnished by the Registrar-General's Department, and, in fact, the modern science of vital and medical statistics generally.[11]

Looking again at the progress of epidemiology in the seventeenth century, we are struck with the fact that at this time various "new fevers" began to be described. I can show you several books relating to this subject by Grieve, by Whitmore,[12] and others. What these new fevers were is not always clear. Sometimes they look as if they were typhoid fever, sometimes typhus (though this latter is generally distinguished), and sometimes what has been called "epidemic malaria," while there were unmistakable epidemics of influenza also; but, as I am not speaking of the history of epidemics, I leave these questions untouched. Shortly after the disappearance of the Great Plague a period began in which these fevers were extremely common, both in this country and in Holland. We have a good account of one of the epidemics by Dr. Christopher Love Morley, an Englishman educated at Leyden, who describes, among others, his own case.[13] The impossibility of fitting in these diseases with the traditional description of tertians, quartans, and the like, undoubtedly gave great stimulus to the study of fevers, which is shown in the classical work of Morton,[14] in some chapters of Willis, and especially in the celebrated observations of Sydenham. These three great physicians may be grouped together as earnestly endeavouring to study epidemic diseases without any bias of scholastic interpretation, as if they were natural objects—as employing, in fact, what we may call the natural history method; although in other respects they were, especially Willis and Sydenham, very far apart. But as Sydenham was undoubtedly the most prominent representative of the school, and also the most influential, it will be enough if we confine our attention to him.

Sydenham, in approaching the subject of epidemics, was evidently inspired by the example of Hippocrates. Like the Father of Medicine, he gave copious records of the climatic and other conditions in connexion with the prevalence of epidemics from 1661 to 1675. Unlike Hippocrates, he has not left detailed clinical reports of his patients. He attached little importance, as he himself said, to recording numerous cases. We cannot, however, but regret that this was his decision, for an adequate record of the course and symptoms of some of his individual cases of fever would have been extremely valuable and would have enabled us to distinguish clearly—what is now sometimes

[9] London's Dreadful Visitation, or a Collection of the Bills of Mortality for this Present Year. By the Company of Parish Clerks of London, &c. 1665.

[10] De Rachitide, sive the Rickets. By Francis Glisson, with the assistance of George Bate and Ahasuerus Regemorter. London, 1650.

[11] These records formed the basis of a book by Captain John Graunt, called "Natural and Political Observations on the Bills of Mortality (1661 &c.)," which was one of the earliest, or quite the earliest, attempt at collecting vital statistics. This was followed by the "Essays on Political Arithmetic" of Sir Wm. Petty (who is said to have collaborated in the former work); and the works of Petty are, I believe, generally admitted to have been the starting-point of the modern science which has lately been called "Demography." This fact was dwelt upon by some of the foreign visitors to the International Congress of Hygiene of London in 1891. I refer especially to Dr. Körösi of Budapest.

[12] Febris Anomala, or the New Disease. By H. W (hitmore). 1659.

[13] De Morbo Epidemico, 1678-1679. By C. L. Morley. London, 1680.

[14] Morton: Pyretologia, sive de Morbis Universalibus Acutis. 1692.

difficult—the precise species of fever he was dealing with.[15] Sydenham's great principle in explaining epidemics was that of the *epidemic constitution* of the year. This was something independent of mere heat and cold, moisture and dryness, which was due to an alteration of the air. While this epidemic constitution was the cause of the prevalence of one particular disease—say variola or plague—it also influenced other diseases besides the dominant one; so that when variola, for instance, was prevalent other diseases partook of a variolous character. Notwithstanding, Sydenham never believed in one disease being changed into another. He insists very strongly on the *specific* character of diseases, which, he says, are like plants, having each its typical way of beginning, developing, and coming to an end. He himself did much towards discriminating different species of disease. The theory of *epidemic constitution* has had many defenders, and the view that one dominant epidemic disease impresses some of its own character on other diseases has also been held in quite modern times—with regard, for instance, to diphtheria. Not very long ago the theory of a "change of type of disease" was actively discussed. I must confess to being very sceptical as to the reality of any such phenomena, but to discuss such a question now is evidently impossible. I would only throw out the hint that the existence and constancy of the laws of contagion were less clearly recognised in Sydenham's time than now, and the diagnosis of altered forms of fever was necessarily less minute, so that what was called the "epidemic constitution" might often be explained by the introduction into a particular place of some disease previously unknown there. Hirsch sets down most of the epidemics of the "new fever" as due to the diffusion of an endemic malarial fever from its original seat to other places where it was not habitually present. Whether this is an adequate explanation, and whether it explains the production of a new epidemic constitution in certain localities, I will not venture to decide. I might remark also that the theory of epidemic constitution has quite failed to satisfy one test of a scientific law—namely, that of prediction; for no one has ever been able to foresee the occurrence of an epidemic constitution, and the only evidence for it is the actual production of an epidemic.

Sydenham's observations again were imitated in those of Huxham, who for twenty-five years carried on at Plymouth most careful meteorological observations, combined with records of the prevalence or severity of diseases, which he thought to be influenced by atmospheric conditions. The same task was undertaken by Fothergill, by Willan, and by Bateman in London down to the beginning of this century. In reading these laborious and accurate observations one cannot help, I think, feeling a sense of disappointment. Even now it is exceedingly difficult to trace any definite relation between weather and epidemic diseases, except in so far as that cold or hot seasons naturally favour particular maladies of the respiratory or of the digestive systems; but why special epidemics of cholera, of influenza, or of measles should come in one year more than another is a question on which, it must be confessed, meteorology has hitherto thrown little light.

At the beginning of the eighteenth century the study of epidemiology showed a distinct revival. Perhaps one indication of this was the publication by Freind of "Hippocrates on Epidemics," to which I have already referred. But in 1720 the outbreak of plague in Marseilles and Southern France sent a panic through Europe and led in England to the publication of a new literature on the subject. First came Mead's well-known pamphlet "On Pestilential Contagion,"[16] written at the request of the Secretary of State Craggs, in which he advocated strict quarantine regulations, which were actually authorised, but never carried out. Mead's work is, of course, not based on experience and has no merit except the clearness of the style. It went through six editions before the end of the year. (I show you the first edition.) Naturally it called forth replies: among others one by Dr. John Pringle,[17] in which he entirely denied the efficacy of quarantines. Old tracts from the time of the Great Plague were looked up and reprinted;[18] while Caius's Latin tract on the sweating sickness again saw the light, being edited probably by Jebb.[19] But the excitement soon died away and left no permanent mark on English medical literature.

[15] T. Sydenham: Observationes Medicæ. 1676.

[16] Mead: Short Discourse concerning Pestilentia Contagion. First edition, 1720.

[17] Inquiry into the Nature of the Plague. By J. Pringle. 1722

[18] Collection of Valuable and Scarce Pieces on the last Plague of 1665. London, 1721.

[19] See Note 5.

The middle of the eighteenth century, which has been regarded as a period almost of stagnation in the progress of medicine, was nevertheless not without influence on epidemiology. It is true that little advance was made in the science of medicine, and few brilliant discoveries are associated with this period—at least until the last quarter of the century; but through the whole of the period, in which Mead, Heberden, Pringle, and Fothergill are among the most conspicuous names, great advance was made in the detailed knowledge of individual diseases. Now it is this knowledge of individual diseases which alone makes accurate diagnosis and discrimination possible. It is quite indispensable to a knowledge of epidemics, and, looking back over the whole period we have traversed, it is fair to say that a want of this detailed knowledge was the cause of the failure of all the earlier attempts, even including those of Sydenham, at constructing a science of epidemics. Even in this century the confusion between typhus fever, typhoid fever, and relapsing fever made it impossible to establish any coherent laws of the incidence and frequency of these diseases. It is only since they have been discriminated that we have been able to trace the influences which have made one or other of these fevers prevalent at any particular time or place. The lesson to be drawn is that epidemiology can only be founded on a basis of accurate clinical medicine.

The one most important event in the epidemiology of the eighteenth century is beyond dispute Jenner's great discovery of vaccination; but the history and literature of this subject have been so often treated that I will here content myself with this brief mention and humble tribute. There are, however, two other branches in which the eighteenth century made important contributions to the science of epidemiology. The first is associated with the name of Sir John Pringle. This distinguished man was an army practitioner and may be said to have been the first who systematically studied the medical aspect of army diseases as distinguished from the surgical. His classical work, "Observations on the Diseases of the Army," published in 1761, was the starting-point of all modern improvements in military hygiene. I mention him with the greater pleasure because medical officers of the army have, by following in the footsteps of Pringle, made so many valuable contributions to the work of this Society. Sir Gilbert Blane rendered corresponding, and perhaps equal, services to the hygiene of the navy; but his medical observations were less important. The second branch of epidemiology, which began in the eighteenth century, was that of the study of foreign diseases. Considering the complexity of our relations with so many foreign countries, through the army, through the navy, through colonisation, travel, and so forth, it is not surprising that English medical writers should have contributed so largely to this branch of medicine, though the earliest and for a long time the only workers in this field were the Dutch physicians. Among the earliest British workers I would mention the name of Patrick Russell, whose observations on the plague and other diseases at Aleppo were published in 1791.

In the present century knowledge of such diseases has been greatly extended, and observations of this kind have formed a most valuable branch of the work of our Society. It is to those members of our profession who have gained experience either in military or civil practice in India that we owe a large part of these observations.

If I were to attempt to sketch, even briefly, the progress of epidemiological science within the present century I should not only be recounting much that is known to many of you much better than it is to myself, but I should also go far beyond the bounds of an address like the present. Looking at the relation of our branch of medicine to others, one cannot but be struck with the fact of the extremely wide field which the work of this Society covers. We touch clinical medicine on the one hand and statistical science on the other. We have close relations to geography and to history. We make use of the work of the traveller, the missionary, and even the sportsman, as well as that of the chemist and the physiologist. Part of our material is derived from the laboratory, and another part from external nature in the widest sense. Our progress is, moreover, intimately connected with the progress of numerous detailed branches of medical and of extra-medical science. It is no wonder, then, if the progress of epidemiology has been slow and interrupted; but still it does seem a little remarkable that the broad outline sketched by Hippocrates more than two thousand years ago should have waited so long to be filled up in proper colour and in adequate detail.

THE RADICAL CURE OF FEMORAL AND INGUINAL HERNIA.

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1. *General considerations.*—The following notes of the radical cure of inguinal and femoral hernia are founded upon upwards of 57 operations. Of these, 45 were performed on non-strangulated herniæ, and 12 after kelotomy. I have also availed myself of the opportunities I have had of watching and assisting at the practice of my colleagues at St. Bartholomew's and the Great Northern Hospitals. It is now quite unnecessary to begin with a defence of the operation of radical cure of hernia. It is at present fully recognised that it is a great boon and that in properly selected cases it gives results equal to those of other operations in surgery. The task before surgeons now is: firstly, the selection of the right class of cases; secondly, the selection of the operation best suited to the case; and, thirdly, the prevention of suppuration. The following cases are published as an aid to the solution of these problems. I propose to mention operations on femoral herniæ first, and afterwards those upon inguinal herniæ in males and in females. Before undertaking or recommending the operation of radical cure it is important to realise what it can and what it cannot do. In the first place, no operation on the abdominal wall can deprive a human being of his predisposition to hernia. I have never examined an abdomen in which an extrusion of the intestines could not occur. The mesentery is always long enough to permit them to enter one or other of the hernial apertures.[1] All that one can hope to achieve by an operation is to make the abdominal wall as strong as it is in ordinary individuals; but inasmuch as all are liable to hernia it would be rash to promise patients that they would never again have one, or that relapse could never occur. Thus it happens that when this has been explained the patients may elect to try the alternative treatment by trusses. This is not free from disadvantages. It is expensive and troublesome, and trusses not infrequently fail at critical moments. The apparent cure which is sometimes effected is not to be relied upon. Amongst my notes of strangulated herniæ many such as the following occur: "Had a hernia in infancy which got well, but came down suddenly at twenty-five and was acutely strangulated"; or, "wore a truss for nine months when an infant, but hernia relapsed again at the ages of eleven, thirteen, and sixteen"; or, again, "ruptured in infancy and wore a truss until five years old; at the age of twenty-five was lifting, when rupture suddenly returned and was acutely strangulated," and so forth. Of course it may be argued that these were new herniæ, but it is more reasonable to suppose that the processus vaginalis had never properly closed. The chance of a cure by trusses becomes decidedly less as age advances, and is improbable in acquired hernia; further, there can be no doubt that after a truss has been worn the local conditions are less favourable for a radical cure. There is much more matting of the sac with the cord or surrounding tissues, and after a time a number of bursal spaces develop, which may be very embarrassing and to some extent may prevent an efficient operation.

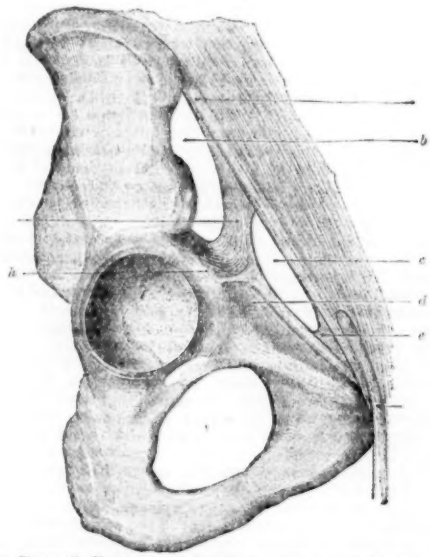
As the measures required to prevent suppuration are the same for each class of case they will be mentioned first. It is usually believed that radical cures are particularly prone to suppuration; however, I feel sure that by careful organisation it may ultimately be banished even from hospital practice. A glance at the details of the cases will show how infrequent it has been, and when it has occurred there has been no difficulty in tracing it to its source. For its avoidance the most minute care is necessary on the part of the surgeon and of all who have to do with the operation. Heat and chemicals are relied upon for disinfection and asepsis. As regards the chemicals it may be noticed that several are in use, but at present I think that carbolic acid for the instruments and biniodide or perchloride of mercury for the rest are the most suitable. Whatever chemical is employed, it ought to be used with a clear knowledge of its mode of action and of the strength required; in other words, the operator ought to know accurately what his chemicals can and what they cannot do. The following is now the routine of an ordinary operation. On the preceding evening the patient has a hot bath; the part is carefully shaved and washed with soft soap and water, and its sebaceous matter is removed by ether; next it is disinfected with perchloride or biniodide of mercury in alcohol (1 in 1000 for the former and 1 in 2000 for the latter), and covered with a carbolic gauze dressing, the layers next to the skin having been soaked in glycerine of perchloride (1 in 2000) or biniodide of mercury and glycerine (1 in 4000), or in 1 part of carbolic to 40 parts of glycerine. A very large area of the abdomen is treated in this way. The hands of the operator and of his assistants are prepared by cutting the nails, scrubbing with soap and hot water, and soaking for a minute in a solution of perchloride of mercury in spirit (1 in 500). The instruments and silk are boiled in water for not less than fifteen minutes and are placed in carbolic lotion (1 in 40) in a sterilised dish or basin, from which they are taken by the operator, used, and replaced without contamination. Sterilised silk has always been used for the deep sutures and ligatures, but silkworm gut has certain advantages for the skin sutures. The field of operation is surrounded with clean mackintoshes covered with towels which have been sterilised by steaming for half an hour, with subsequent soaking in carbolic lotion (1 in 40). The penis is wrapped in a layer of gauze soaked in the same solution. The nurse hands the sponges to the operator or his assistant in a bowl of solution of biniodide of mercury. This drug is now used because it seems to have the advantage of not coagulating albumen, and therefore the sponges can be washed in it and kept sterile. Before being used the sponges are prepared by removing the sand by beating and shaking; any shell or coral is removed with dilute hydrochloric acid; and bleaching and disinfecting are done with sulphurous acid solution (1 in 4). When not in use they are kept in fresh carbolic lotion (1 in 20) in a well-stoppered glass jar, and the lotion is changed once a fortnight. The only special instruments which are required for the radical cure of either inguinal or femoral herniæ are two of Professor Macewen's blunt curved needles. The best patterns are those in which the handle is made with a loop like that of an ordinary wire buttonhook. The operation is conducted as if it were a bacteriological experiment. As little as possible is given to the assistant to do, and all hæmorrhage is staunched at once. At the end the wound is thoroughly disinfected with lotion and closed. The skin is dusted with iodoform, and a layer of carbolic gauze, which has been well disinfected by soaking for some hours in a weak disinfectant (1 in 40 carbolic lotion, 1 in 2000 perchloride of mercury lotion, or 1 in 4000 biniodide of mercury lotion), is applied; this is covered with alembroth wool and the usual eight-fold Listerian outside dressing. This dressing is shaped so as to fit round the thigh with a strap and buckle, and round the pelvis with a similar contrivance. It is secured with a carefully applied spica bandage, which also exerts moderate pressure upon the wound. Unless these precautions are taken groin dressings are apt to become displaced, with subsequent suppuration. The after-treatment of the operation of radical cure is simple. I always stipulate before undertaking a case that the patient shall remain three weeks in bed, three weeks on a couch, and have six weeks' gentle exercise. After three months have been passed in this way the patient is allowed to do as he pleases. If the aponeurosis of the external oblique muscle has been divided it is wise to prolong the rest in bed by another week. I feel sure that relapses are due to a disregard of these precautions. For twelve hours after the operation the patient merely requires a little water, which may be warm, tepid, or aerated, and a little cold meat essence. During the next twenty-four hours a little beef-tea, bread-and-milk, milk and soda-water, or tea and bread-and-butter are allowed. Afterwards fish and custard pudding and by the fourth day an ordinary diet may be given. As a rule there is no complaint of any pain in the wound, but usually the upper part of the abdomen is said to feel stiff and to ache as if it had been beaten. Should there be any real pain after the operation a dose of morphia may be given, but this is not often required. As nearly all the wounds—more than 85 per cent. of the non-strangulated cases—heal by first intention, there is hardly any disturbance of the general health, and reading and like pastimes may be indulged in.

2. *Femoral hernia.*—The operation which I have performed upon femoral herniæ is the same as that which most surgeons practise, but with an additional device for closing the femoral

[1] Vide Hunterian Lectures on the Pathology &c. of Hernia, by C. B. Lockwood, 1889.

canal, which, as far as I am aware, is not generally used, but which is very efficacious. Briefly, the procedure is as follows: The sac is exposed by a vertical skin incision kept, for the avoidance of infection, well away from the organs of generation, and extending an inch above Poupart's ligament and two inches down the thigh. The first precaution renders asepsis easier, and the second facilitates the introduction of the deep sutures. In very fat persons a small sac may be difficult to find, but the spine of the pubes is a sure guide to it. The sac is opened and its contents are dealt with in the manner described below. Next it is freed from its surroundings, especially from the femoral canal, and its neck is transfixed and secured with a stout silk ligature expeditiously tied in a Staffordshire knot. The ends of the knot are left long and are used to draw the neck of the sac into the abdomen and to fix it there. This is done by threading each ligature in turn upon a Macewen's needle, which is passed up the femoral canal, along the subperitoneal tissue, and thrust through the abdominal wall about the middle of Hesselbach's triangle and just above the inguinal canal and its contents. As these sutures are passed the skin and subcutaneous fat are pulled up out of the way of the needle, which emerges through the aponeurosis of the external oblique muscle, where it is unthreaded and the silk is tied in a firm knot upon the surface of the aponeurosis. When the skin is released the knot is buried beneath it. In passing these needles up the femoral canal the common femoral vein is protected with the finger and the point of the needle is turned inwards. After this stage the neck of the sac ought to be inside the abdomen, having been pulled up by the sutures, and the femoral canal ought to be quite clear and empty. To close the femoral canal I have been accustomed of late to fasten together Hey's and Cooper's ligaments. By the former is meant the continuation of the falciform process of Burns, which runs inwards towards the spine of the pubes and forms the roof of the femoral canal; the latter is a strong fibrous band[2] which, as is shown in the accompanying figure from Professor Macalister's book on Anatomy, runs along the pectineal ridge from the spine of the pubes to the ilio-pectineal eminence and gives attachment to the pectineus muscle and to the fascia which covers it. Cooper's ligament is of considerable strength and gives a very strong hold to the sutures placed beneath it. These are passed as follows. With a Macewen's needle one end of a strong silk ligature is thrust from within outwards through Hey's ligament at its junction with Poupart's ligament. To accomplish this the needle is passed up the femoral canal. The other end of the same ligature is next carried with the same needle from within outwards between Cooper's ligament and the pectineal crest of the pubes. In performing this manœuvre the common femoral vein is protected with the finger, and to pick up the ligament the point of the needle is scraped over the edge of the ridge of bone. Sometimes one suture is sufficient to close the femoral canal, but as a rule two or even three are required. As I have already said, the ligatures have an exceedingly strong hold, and when they have been tied the femoral canal is quite occluded. Whether there is any danger of compressing the femoral vein I hardly know, but the possibility must be taken into account in passing the sutures. The sutures must be firmly tied, and it is better to diminish their number rather than to tie them loosely. This operation is not difficult to perform, but I have seen, though not experienced, difficulty in finding the sacs of femoral herniæ on account of their smallness or because of the fatness of the patient. Sometimes, owing to the sac having become converted into a multiplicity of cysts by inflammatory changes, it is hard to find the opening into the abdomen. In one of my cases two blind cysts containing yellow serum were explored before the third, which opened into the peritoneal cavity, was found. Also the sac may be hidden by a mass of fat surrounding its exterior. In one case a tumour which felt like an irreducible epiplocele was found to consist of a mass of subperitoneal fat with a small sac in its centre. In another case the hinder wall of the sac was very thick and fleshy, simulating the presence of some abdominal viscus; this condition was met with in a slighter degree in another case. Most of the femoral herniæ contained adherent omentum, or omentum and fluid, or fluid alone. As a rule the adhesions were easily broken down with the finger, but sometimes those near the neck of the sac were troublesome to undo. In a case of double femoral epiplocele sent to me by Mr. Fraser Stokes I found a large piece of omentum in the right sac. This was transfixed and ligatured with a Staffordshire knot; but the pedicle was so large that great force was required to thrust it into the abdomen. Since this, whenever there has been much omentum it has been secured with an interlocking chain ligature, such as is described in works on surgery.[3] It requires practice to introduce this ligature neatly and quickly, but it is secure and does not make a large pedicle. A bulky omental pedicle has other disadvantages. In the case I have just mentioned and in another one it seemed for a time to cause some abdominal discomfort, and it was thought that a tender spot marked its site. I have never seen suppuration around it, such as is described by Lucas-Championnière in some of his cases.[4] The omentum is a structure to be treated with great care. In my Hunterian Lectures I mentioned fatalities due to ligatures slipping. Since then I have seen a case in which the operator unwittingly tore through some of the omental vessels near the stomach whilst pulling the omentum down; in consequence the peritoneal cavity became full of blood, and the patient ultimately died. Twelve operations have been performed for the cure of non-strangulated femoral hernia, two of the patients being males and the rest women. The only fatality occurred in this class and was due to acute bronchitis after the ether. The patient succumbed on the sixth day. The wound was almost healed by first intention, and it was clear that the operation had firmly closed the femoral canal and ring without leaving a peritoneal depression. It was impossible to force the finger down the femoral canal into the thigh. Although I blame the ether for this most unfortunate calamity, I have to add that severe bronchitis occurred in another case after the administration of chloroform in an operation for the radical cure of both an inguinal and of a femoral hernia in the same person and at the same time. The operation was therefore a prolonged one, and the chloroform had to be given for over an hour. In the case of ether bronchitis the operation was brief, but a history of a winter cough was afterwards obtained. Of the eleven cases which remain ten healed by first intention. One dressing was enough for each, with the exception of an early one, which was drained and in consequence was

FIG. 1.



a, Poupart's ligament. *b*, Lacuna musculoris. *c*, Lacuna vascularis. *d*, Cooper's ligament. *e*, Gimbernat's ligament. *f*, Spermatic cord. *g*, Ilio-pectineal ligament. *h*, Ilio-pectineal eminence. *Note.*—The line *d*, which marks Cooper's ligament, goes a little too far.

[2] See A Text book of Human Anatomy, by Prof. Alexander Macalister, 1889, Fig. 261, p. 170. See also Sappey: Traité d'Anatomie Descriptive, 1876, p. 406 et seq.

[3] For instance, Greig Smith: Abdominal Surgery, p. 139, Figs. 27, 28, and 29, 1888.

[4] Cure Radicale des Hernies, p. 448 et seq. Paris, 1892.

dressed a second time for the removal of the tube. The operation was performed on Jan. 10th, 1888, since which date no case of femoral hernia has required to be drained. In another case a second dressing was required because the patient, who was neurotic, complained of pain, so the wound was examined as a precautionary measure. Nothing was found and the wound healed by first intention under the second dressing. The only case which did not heal by first intention had very slight superficial suppuration. No silk came out, and the highest temperature was 99·2° F. The wound was dressed on the tenth day and after having been dusted with iodoform and dressed with alembroth wool gave no further trouble. The operation was carried out on Feb. 2nd, 1891, and she left the hospital on March 12th with the wound healed and without a truss. Silk sutures and ligatures were used for all these cases, and in none of them did any of them come out.

Two men were operated upon for the radical cure of femoral hernia. The operation in men is rather more difficult than in women, because the femoral canal is not so large and the structures are rigid, so that it is more difficult to manipulate the needles in putting in the deep sutures; also the presence of the spermatic cord just above the femoral canal is an embarrassment and has to be shunned. Both of these cases healed by first intention, and the abdominal wall now seems to be very strong and without impulse. One of these men had an inguinal hernia operated upon at the same time, and both wounds healed by first intention. He was obviously a bad subject for a permanent cure, but he was very anxious to have it done so as to enable him to secure the advantages of a club. The operations in this class are not very numerous because as a rule those who have small and easily reducible femoral herniæ prefer to be treated with trusses. This will usually suffice, as they are generally women who are little exposed to strains, violence, or heavy lifting; also, an operation upon reducible femoral hernia is not to be strongly urged, because in a certain number the lesion is not, like so many inguinal ruptures, due to a local congenital defect of the abdominal wall, and still therefore less capable of being cured by local measures. The rupture is in some cases of femoral hernia a part of a general defect of the tissues of the peritoneum and of the suspension of the viscera. Nevertheless, there are many which seem to be due to local remediable causes, and in these a cure can usually be obtained. There is a large class of patients with irreducible femoral epiploceles and with so-called femoral hydroceles, to whom the operation of radical cure is the greatest boon, and upon whom it can be strongly urged. Such patients are most grateful to be relieved of their pain and discomfort, and to be freed from those ill-adapted cupped trusses, that are sometimes ordered; indeed, one of my cases was wearing one of these things when strangulation occurred. Also there are many young women to whom any kind of truss is irksome, and who when they are offered the alternative of an operation gladly embrace it in the hope of obtaining a permanent result. After kelotomy a radical cure prevents immediate recurrence, subsequent relapse, protrusion of the sac, suppuration in the sac, sloughing of the sac, and peritonitis spreading from the sac.[5] Therefore a proper radical cure has been effected five times after kelotomy for strangulated femoral hernia. Four of these cases healed by first intention under a single dressing. One patient died, but there was no clear evidence to show that the untoward result was caused by the radical cure. The details of this case are instructive and are briefly as follows. A woman sixty-seven years old had had a right femoral hernia strangulated for fifty-six hours. At the operation the gut was in good condition and was replaced, a radical cure being afterwards effected. For two days there was complete relief with the passage of flatus and the cessation of vomiting. However, the symptoms of strangulation then recurred and were attributed to peritonitis, as a tender and indurated swelling could be felt in the iliac fossa. The patient died, and a knuckle of gangrenous intestine was found prolapsed through a rent in the peritoneum not far from the original neck of the sac. I greatly regret that I did not perform an exploratory laparotomy in this case as soon as these symptoms of strangulation recurred. I have not included in this class some cases in which it was deemed expedient merely to pass a ligature round the neck of the sac; as, for instance, was done in the case of a bed-ridden old woman operated on for Dr. Wight, or in that of a very old man operated on for Mr. Frank Godfrey.

3. *Inguinal hernia.*—As far as possible I have confined the operation for the radical cure of inguinal hernia to the congenital herniæ of young adults, the age of the patients averaging eighteen years and eight months. As I have endeavoured to show elsewhere,[6] these may, on anatomical and pathological grounds, be expected to give the best and most permanent results. Mr. A. Quarry Silcock, who worked upon these lines, brought to the Harveian Society the best series of cured cases which has yet been shown in London.[7] I have only twice to my own knowledge operated on acquired inguinal herniæ—once to enable the patient to wear a truss and once to enable him to benefit by a club to which he belonged. In congenital hernia there is no morbid defect of the peritoneum or mesentery, or suspension of the abdominal viscera, but only a local developmental defect of the abdominal wall, capable of being completely remedied by operation. A most favourable result may confidently be anticipated when there is a long, narrow congenital sac occupied by a thin strip of omentum. On the other hand, the aged and middle-aged with acquired herniæ owe their ruptures to causes which cannot be removed by an operation upon the abdominal wall. Their tissues are defective and deteriorated, and the ruptures are often associated with simple or complicated prolapse of the mesentery. I have occasionally operated on this class, but only to enable the patient to wear a truss. In one man two very large herniæ were operated on at an interval of a fortnight. The right sac contained the cæcum, vermiform appendix, and ileum; the left was empty. Both wounds healed under a single dressing, and the patient was able to wear a double scrotal truss and to earn his living again. I would once more urge that the choice of cases for radical cure in non-strangulated hernia should be made on anatomical and pathological grounds and with clear and precise knowledge of the disease; too many unsuitable cases have been operated on. Children, too, are not very suitable for operation. Their tissues are delicate and hard to manipulate, their wounds are difficult to keep aseptic, and they are not infrequently cured by trusses. However, I do not hesitate to operate upon this class if their ruptures are small or if they cannot wear trusses. Inguinal herniæ in little girls seem to be particularly favourable and give excellent results.

A great number of the cases of inguinal hernia which I have operated upon were in reality operations of necessity and not of expediency. Some of the patients could not wear a truss because of adherent omentum, some on account of irreducibility, others because of malposition of the testis; several, in spite of trusses, had had strangulation and did not wish to incur the risk of it again; some were operated upon to enable them to enter or to remain in the army; and, lastly, some few because, having seen the benefit in others, they voluntarily preferred the risk and inconvenience of an operation to the troubles of a truss. This is an increasing class. The points to be aimed at for the radical cure of inguinal hernia are now so well known as hardly to require to be mentioned. The first is the obliteration of the sac without leaving a depression at its opening into the peritoneal cavity, and the second is the restoration of the inguinal canal. Inguinal herniæ differ so much from one another that I am now accustomed to graduate the operation which is required to fulfil these conditions according to what is met with at the time of operation. The cases in which the inguinal canal was freely opened were those in which the hernia was incomplete or in which there was a retained testis, or in which a large and neglected rupture had so stretched and obliterated the canal that an efficient operation could not be carried out through the unenlarged external abdominal ring. In the last class the inguinal canal had quite lost its valvular arrangement, its posterior wall having been dragged inwards towards the middle line by the traction of the hernia until the finger could be thrust straight into the abdomen. The operations on inguinal herniæ may be divided into two classes: (1) those in which the inguinal canal was not opened, the aponeurosis of the external oblique muscle having been preserved intact; and (2) those in which the inguinal canal was freely opened by division of the aponeurosis of the external oblique muscle. Those who are familiar with the somewhat extensive literature of this subject will see that in carrying out the procedures I have freely availed myself of the

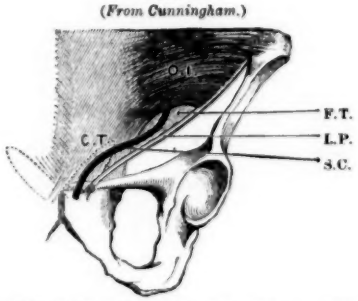
[5] **On the Importance of performing the Radical Cure after operations for Strangulated Hernia, by C. B. Lockwood. Brit. Med. Jour., July 8th, 1891.**

[6] **Hunterian Lectures on Hernia, 1889, p. 104.**

[7] **Clinical Journal, vol. ii. p. 42.**

operations devised by Mitchell Banks, Macewen, Ball, Barker, Kocher, Bassini, and Halstead. The first operation, which I shall in future call the "ordinary" one, was done in cases in which the hernial sac was long and narrow, and either empty or occupied by a slender piece of omentum, often slightly adherent. In this class, which is the most favourable one, after the sac had been opened and the omentum cut away, the finger had to be thrust a long way up the canal before it arrived at the mouth of the sac, which latter had not been dragged inwards, but lay opposite the centre of Poupart's ligament; also, when the finger was thrust against the back of the inguinal canal, it was found to be intact and in its proper position. The details of the ordinary operation are briefly as follows. The whole length of the front of the inguinal canal is exposed by a straight incision three-quarters of an inch above and parallel to the inner half of Poupart's ligament. The greatest care is taken to shun the scrotum. As the skin of the groin is loose it is quite easy by displacing it to get at anything through the incision. The sac is opened as it emerges from the external abdominal ring and explored with the finger, and its contents are dealt with. If the omentum is present it is treated with great consideration and the same as in femoral hernia. Next, if the sac is a congenital one or very long, it is cut across opposite the external ring and its lower end is dropped into the scrotum, never to be seen or heard of again; but if the sac is short it is unnecessary to cut it across. In any case its upper end is separated from the spermatic cord as far as the peritoneum. As a rule it is best to pull the constituents of the cord away from the sac with dissecting forceps. The separation is easier as the internal ring is approached and it must be thoroughly done; later it will be seen that the neglect of this precaution has led to a relapse. The upper end of the sac is now pulled down, usually twisted upon itself, transfixed with a blunt needle armed with stout twisted silk, and is tied high up at the internal abdominal ring with a Staffordshire knot. Any redundancy of the stump is cut away, and the ends of the silk, which have been left long, are used to fix the stump of the sac beneath the fascia transversalis, and, more particularly, beneath those muscular fibres of the internal oblique muscle which arise from Poupart's ligament, and which in future, for the sake of brevity, I shall call the "arciform fibres." The accompanying figure from

FIG. 2.
(From Cunningham.)



O.I., Internal oblique muscle. C.T., Conjoined tendon. F.T., Fascia transversalis. L.P., Poupart's ligament. S.C., Spermatic cord. O.I. marks the situation of the stump of the sac.

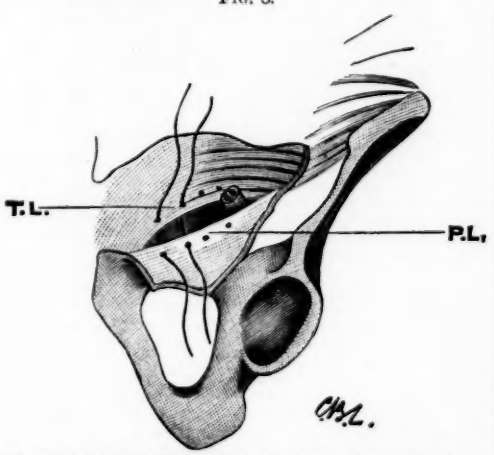
Professor Cunningham's[8] admirable work shows these fibres, and the position of the stump would be just below the letters O.I., and, of course, hidden from sight by the arciform fibres. A finger is used to make a bed for the stump of the sac in that position, and it is fixed with the ends of the silk ligature which encircles it. This is done by carrying the ends separately up the inguinal canal with a Macewen's needle, which is forced in two places a little way apart through the fascia transversalis, arciform fibres, and aponeurosis of the external oblique muscle. The ends of the ligature are unthreaded and are tightly tied upon the front aspect of the aponeurosis of the external oblique muscle, the skin wound being pulled up to facilitate this. It is obvious that, after the stump of the sac has been fixed in this manner, any impulse imparted to it from within would be expended in driving it against the arciform fibres and the external oblique muscle, both of which are structures eminently qualified to prevent extrusion. After the hernia and its sac have been dealt with the inguinal canal is sometimes so perfect that little more remains to be done; but as a rule it is necessary to approximate the conjoined tendon to Poupart's ligament with one or two deep sutures passed as follows. With the blunt curved needle, guided by the finger, a stout silk ligature is passed through the conjoined tendon about halfway up the inguinal canal, care being taken to avoid the peritoneum and deep epigastric artery. The ends of this loop are next carried with the blunt needle through the front of the inguinal canal and are tied subcutaneously. The upper end of the loop ought to be passed behind the vas and through the arciform fibres and external oblique muscle; the lower pursues the same course, but being a little lower down the canal it may only pierce the external oblique aponeurosis. When this suture has been properly passed and tied it pulls the conjoined tendon downwards and outwards behind the cord and restores the back of the inguinal canal. Sometimes a second loop is required, but if the back of the canal is so defective as to require more than two sutures I prefer to divide the aponeurosis and to perform Bassini's operation. To complete the operation the external ring may require to be closed a little, and finally the skin incision is sutured. It will be observed that little has been said about the internal abdominal ring and about closing it. The introduction of this mythical aperture into surgical writings has been a great bugbear to everyone. It is difficult to manufacture in the dissecting-room and it is not to be seen in the operating theatre. As a phrase, however, it is convenient to mark the point at which the spermatic cord begins to enter the inguinal canal. In cases of small, incomplete inguinal herniæ an operation the same as the ordinary one has been carried out, except that to reach the sac the inner half of the front wall of the inguinal canal has been divided. In operating upon females this is often necessary, or when minor difficulties are met with in separating the sac from the cord or in the introduction of the deep sutures. I have not yet seen any ill-effect ensue from division of the aponeurosis, and it greatly facilitates the manipulations. It is impossible many months afterwards to tell that it has been divided, the external abdominal ring having in several cases retained the dimensions given to it at the operation. Nevertheless, the aponeurosis ought not to be heedlessly divided. It is obvious that a structure such as it is will take long to repair, and that the patient must be kept in a recumbent position for a longer time than if it had been left intact. The effect of suppuration on its repair need hardly be mentioned; but as that is a strictly preventable occurrence it may be assumed that we shall gradually obtain better success. The ordinary operation was done 17 times upon the inguinal herniæ of males, and of these 14 healed by first intention, 1 had very slight superficial suppuration, and in 2 the suppuration led to the extrusion of some of the deep sutures. The slight case of suppuration hardly delayed the healing of the wound, which only required three dressings and was well on the twelfth day. In this case a misplaced, atrophied testis was also taken away. The slight suppuration was caused by a small sinus connected with a suppurating gland. Both the other cases of suppuration were thought to be due to ill-prepared silk; they occurred at the same time and under the care of the same house surgeon. None of the cases which healed by first intention required many dressings: 10 healed under a single dressing; 3 had two dressings because repair had been hindered in 2 of them by in-turned skin, and in 1 (a boy) by a drainage-tube which was put in on account of oozing of blood at the time of operation; 1 (a boy) was obstreperous and pulled his dressings off several times, nevertheless his wound healed by first intention. In the 2 cases which extruded some of their deep sutures the suppuration was quite local and subacute and was not noticed until the end of the first week. It was treated with boracic fomentation. They caused no anxiety, and nitrous oxide gas was given about the sixteenth day and the silk was extracted. One of these is known to have relapsed.

The operation in which the inguinal canal was freely opened can be described very briefly, as it does not differ in principle from the ordinary one. The inguinal canal is exposed by a similar incision, which is carried through its front wall. At this stage care ought to be taken not to injure the arciform fibres of the internal oblique muscle, otherwise a weak abdominal wall may result. After the interior of the canal has been exposed the hernial sac is opened and explored, and its

[8] Manual of Practical Anatomy, vol. i., p. 405, Fig. 80.

contents are dealt with. If the sac is long and goes down into the scrotum it is cut across at the level of the pubic spine, and its lower end is dropped into the scrotum. The upper end is separated as high as the peritoneum, transfixed with a stout silk ligature, and secured with a Staffordshire knot. The ends of this ligature are used to fix the stump of the sac beneath the arciform fibres, where the finger has made a bed for its reception. For this purpose the two ends are carried with the blunt needle through the arciform fibres and the underlying fascia transversalis in the same way as in the ordinary operation; but sometimes I have found it to be rather better not to pass the ligature through the aponeurosis of the external oblique, as is done in the ordinary operation, because this is apt to interfere at a later stage with the approximation of the aponeurosis. After the stump of the sac has been fixed beneath the internal oblique the spermatic cord is lifted out of the inguinal canal, and the deep sutures, which restore the back of the canal by pulling the conjoined tendon downwards and outwards, are passed in the manner taught us by Bassini. First, the threefold layer, consisting of the internal oblique and transversalis muscles and transversalis fascia, is isolated by pushing the finger between it and the aponeurosis of the external oblique and between it and the peritoneum. Next the spermatic cord is lifted up and the deep internal surface of Poupart's ligament is exposed by the finger or by a blunt instrument. Then, with a Macewen's needle the threefold layer is fastened to the deep surface of Poupart's ligament by from three to six silk sutures, which pierce them both, beginning below near the spine of the pubes, and which are tied inside the inguinal canal beneath the cord. (Fig. 3.) To complete the operation the spermatic cord is returned into the canal, and the aponeurosis of the external oblique is sewn together again and made taut, the wound being closed and dressed. Silk sutures are used throughout, except for the skin, in which silkworm gut is rather better. There can be but little doubt that this operation is thorough, and it has the advantage of being guided by the vision. It may entail, however, some bruising and laceration, and on that account it is more likely to be followed by suppuration unless asepsis is secured. Further, after division of the aponeurosis, it is, I think, necessary to keep the patient in a recumbent position for a longer time.

FIG. 3.



To show the method of inserting the deep sutures after the inguinal canal has been opened. For the sake of clearness the spermatic cord has been cut away instead of having been lifted up. P.L., Poupart's ligament. T. L., Triple layer.

The inguinal canal was laid open and Bassini's operation was performed in nine cases of inguinal hernia in males. One of these had late subacute suppuration, with extrusion of the deep sutures, because an inexperienced house surgeon took the dressing off on the fifth day and removed the stitches, as he thought that the wound was healed. Nine months after the operation this patient wrote, in reply to my communication, that he had occasional pains, but was able to work as a gardener and did not require a truss. Another case had subacute suppuration which ended in the extrusion of sutures, and in a third case there was slight stitch-hole suppuration, which was well in three days and was thought to be due to imperfect disinfection of the skin. The remaining six cases healed by first intention under a single dressing.

Malpositions of the testis were met with in five cases of inguinal hernia. In two of these the organ, being very ill-developed, was excised—a procedure which added to the ease of the operation and made no difference whatever in the recovery. In two cases the testis was brought into the scrotum by inverting it in the manner recently advocated by Mr. Bidwell. In one of these cases the testicle atrophied, but in the other the result was admirable. The gland, although smaller than its fellow, felt quite normal. Recently I assisted my friend and colleague, Mr. Bowlby, to operate on a case in which he was able without trouble to replace an undescended testis in the abdomen and to perform what I have called the "ordinary" operation.

Seven females were operated on for the radical cure of inguinal hernia. In these, owing to the absence of the spermatic cord, the operation was particularly easy, and the results were most favourable. The ruptures were all congenital in their nature, with rather thick-walled sacs and with a small communication with the general peritoneal cavity. Most of the ruptures were incomplete, and therefore the inguinal canal had to be freely opened in five cases and partially in another. After the canal had been opened three or four deep sutures, according to Bassini's method, were enough for its effectual restoration. The ordinary operation was carried out twice; in one case there was no feature of interest, and the other, as I have just stated, merely required a partial division of the aponeurosis of the external oblique. A hernia of the ovary was met with once, and as both that organ and the Fallopian tube were small and ill-developed they were taken away. Healing by first intention occurred in six instances, but one had to have two dressings, because the skin of the abdomen had been blistered. This was remedied by dusting with iodoform and covering with iodoform gauze. The case was aseptic when tested with cultures. One case suppurated, owing, I believe, to the presence of staphylococcus aureus in the skin. At the operation a bit of skin was put into broth and grew that microbe. The suppuration occurred on the sixth day and caused no anxiety.

Thus of 44 recoveries after the radical cure of non-strangulated hernia 36 healed by first intention; of this number 30 required a single dressing and 5 required two; and 1, the troublesome schoolboy, required several. Of the remaining 8 cases, 5 had suppuration which ended in the extrusion of some or all of the deep sutures, and 3 had very slight suppuration, which made no appreciable difference in their healing.

Radical cure after operations for the relief of strangulated inguinal hernia does not give such good results, either immediate or remote, as it does in selected cases, operated on at a chosen opportunity. The immediate results are bad on account of the conditions at the time when the operation is done, and the results are likely to be unfavourable because most of the patients have acquired herniæ which, as I have already said, are only a part of their disease. On seven fairly favourable occasions a curative operation was performed after kelotomy for the relief of strangulated inguinal hernia. Although some of these ruptures were of enormous size,[9] and in one a loop of intestine was resected, they all recovered. I attribute this fortunate result in no small measure to the care with which the strangulated loop was disinfected and to the occlusion of the neck of the sac by the curative operation. The last step is particularly important because suppuration is still common in these cases and occurred in four instances. The causes of the suppuration, which was never of the acute kind and was sometimes very slight, seem to be quite simple, and when known may in future be avoided. For instance, owing to the urgency of the symptoms a proper disinfection of the skin, especially that of the scrotum, could not be carried out with the disinfectants I have hitherto been accustomed to use. Next, owing to the size of the herniæ and the presence of bad adhesions, the scrotum had to be incised; this is always a serious complication. Lastly, owing to the duration of the strangulation, there is no doubt that the fluid in the sac was septic. The general condition of these patients, too, was highly unfavourable for healing of their wounds by first intention.

It is a question how many of these cases ought to be included in a list of radical cures. Three of these patients had the ordinary operation performed, but in four the gap left in the abdominal wall after reduction of the gut was so large, and the condition

[9] Two contained the sigmoid flexure, each having one loop free and another adherent in the sac.

of the patient was so critical, that a thoroughly satisfactory curative procedure could not be undertaken; therefore the gap was simply closed with a series of five or six stout silk sutures. Each of these included the peritoneum and the whole thickness of the abdominal wall, and the lowest were passed so as to pleat up and obliterate the neck of the sac. As suppuration is apt to occur in these cases it is, perhaps, better not to bury these sutures, but to bring their ends out through the skin in the usual way; also stout silkworm gut may be advantageously substituted for silk.

The ultimate results of this somewhat crude operation have been better than I expected. One case was very instructive. The patient had a large oblique inguinal hernia upon the right side, which had been strangulated in 1880 and operated upon. No radical cure was effected, and it came down again in spite of a truss. I operated for strangulation on July 1st, 1886, and effected a radical cure. I saw this man on Sept. 2nd, 1893, with a sound abdominal wall, although in the interval he had worked hard and had been spared the inconvenience of a truss. Another man, who had an enormous hernia, said a year after the operation that he was cured and wore no instrument, being able to work as a cabman; but this case ultimately relapsed.

Like other surgeons who practise in London, I have the greatest difficulty in tracing cases; therefore I am only able to illustrate the ultimate results of the operation of radical cure by giving such samples as I have been able to obtain. I claim, however, that they show that the operation of radical cure of inguinal and of femoral hernia is, when efficiently done upon proper cases, as successful as any operation in surgery. A young man aged twenty-two years was operated on on March 16th, 1892, for the cure of a right inguinal hernia. He wished to enter a trade society which would not admit him if he merely wore a truss. On Oct. 20th last his cure was perfect, he could do the hardest work, and had been a member of his trade society for a year. A gentleman who was operated on on April 21st, 1892, was quite well in October last, being able to shoot, ride, row, or do anything he wished. A schoolboy who was operated on on July 17th, 1892, was quite well on Oct. 20th last, and is now able to play cricket and football. I have no cases of Bassini's operation of more than a year's standing, but I have had no relapse in this class, and those who have come up for inspection seem to be perfect. The ultimate results of the operation for the radical cure of femoral hernia have been quite satisfactory, although I can record a relapse in a case in which the neck of the sac was merely tied. One which was performed on a delicate woman fifty years of age, after strangulation, on Jan. 5th, 1889, showed no tendency to relapse on May 14th, 1890, and she required no instrument until her death, which occurred in the following year. Mr. H. Fraser Stokes reports that a cook aged forty-eight years, who was operated on for right and left femoral epiplocele on Jan 25th, 1891, was quite well on Oct. 20th, 1893. Also that one of her fellow servants, who had a small irreducible femoral epiplocele, wished to have the same operation performed. It would not be easy to find more striking evidence than this of the benefits of the procedure. I have only met with two cases of relapse, although I have taken great pains to keep the cases under observation. In one case the relapse was due to suppuration; it occurred six months after the operation. The patient elected to wear a truss, which he could not do before. The second relapse was due to a faulty operation. I performed the ordinary one on a young man, and six months afterwards his hernia recurred while he was lifting a heavy weight. As the first operation had caused him no pain and very little inconvenience he came back to ask to have it carried out again. As the relapse was very small and high up the inguinal canal the aponeurosis was incised and Bassini's operation was performed. This enabled me to ascertain that the relapse was due to about three-quarters of an inch of sac having been left behind on the first occasion

Upper Berkeley-street, W.

LONDON POST-GRADUATE COURSE.—The vacation courses in Bacteriology, Pathology and Hygiene, have been arranged and will commence on Monday, Dec. 4th, and end on Friday, Dec. 15th. The gratifying success of the September vacation classes shows that there are many practitioners who can only leave their work for ten or eleven days at a time and are anxious to receive further instruction in these important subjects. The class lists are now being made out, and entries may be made on application to Dr. Fletcher Little, 32, Harley-street, W.

THE DETACHMENT OF THE EPIPHYSIS FOR THE ANTERIOR INFERIOR SPINOUS PROCESS OF THE ILIUM THROUGH ENFORCED MUSCULAR ACTION.

BY R. HENRY ANGLIN WHITELOCKE, M.B., M.C. EDIN., F.R.C.S. ENG.

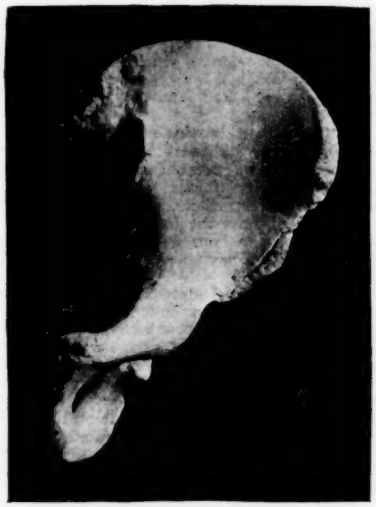
SURGICAL literature affords but few examples of the condition which the above heading describes. With the single exception of a case mentioned by Mr. F. Treves,[1] in which it occurred while the subject was in "the act of running a race," examples are not to hand. For this, among other reasons, it has been considered to be advisable to place on record the clinical details of two cases which have lately occurred in my practice. The hope is also entertained that by so doing cases which may have been observed by others will now be recorded. My belief is that this accident is probably not so rare as at first would seem to be the case. Besides entering into the clinical details of the cases it is proposed to more fully consider and inquire into the anatomy and etiology of the injury as well as to deal with its treatment. The clinical histories and symptoms of the two cases are so nearly identical that one description might almost suffice for both. One evening early in February, 1891, an undergraduate drove up to my house, and after hobbling into my room gave the following history. In starting to run in a race of 100 yards distance, while practising for his college sports, he "seemed to have scarcely travelled ten yards when he had suddenly to stop as he felt something snap, and at the same time his limb became powerless." There was then some pain, but it was "by no means severe," although he "became faint and felt sick" On removing his clothes there was little to be seen excepting that the injured limb assumed the position of semiflexion and was in advance of its fellow, which, being fully extended, was sustaining the whole weight of the patient. When asked to straighten the injured limb by extending the hip- and knee-joints increased pain was felt, and he had extreme difficulty in extending the knee-joint; but what he most complained of was an unpleasant feeling of numbness and tingling perceived all down the extensor surface of the thigh. There was very little discolouration, accompanied by an inconsiderable swelling situated for the most part beneath and to the outer side of the middle of Poupart's ligament—the region, in short, of the anterior inferior spinous process of the ilium. After carefully comparing the two sides and palpating, a distinct crepitation could be elicited on deep pressure in the region of the swelling; and this could be even more distinctly made out when, with the hands placed over the seat of the injury, the patient made an effort to bring the rectus muscle into action. The movable piece of bone gave one a feeling on palpation not unlike that of a loose cartilage in a joint. The diagnosis was then made, but not before all the usual sites had been carefully examined for a possible hernia; the history of something having snapped, the pain, and the feeling of sickness and faintness favouring such an occurrence. A pad with a temporary spica bandage was applied, and the patient was sent back to his college. On visiting him next morning the swelling had somewhat increased, but the discolouration remained about the same. There was pain only on movement, while the tingling sensations persisted unaltered. Two days after this another undergraduate from a different college was seen, and he gave an almost similar history. He had been starting to run "a quarter mile." In the very act of starting—in the first bound, as it were—he "felt something give, and became powerless to proceed." With the experience of the former case it was not difficult to discover what was the matter. In this case a mere scale of bone, as far as could be elicited, came away with the straight head of the rectus, and crepitus was with difficulty made out at first. The tingling sensation and other symptoms described in the former case were also evident.

Thus, the histories and causation of these cases were remarkably alike. Each patient had started with his left limb somewhat flexed both at the hip- and knee-joints, and in advance of the right, the body being bent forwards and, as it were,

[1] Surgical Applied Anatomy, p. 370.

poised upon and supported by it. In the sudden act of starting, the limb behind was used to give the spring, and in the first bound the body and the advanced and flexed limb being suddenly and quickly straightened together, the rectus muscle, already contracting and fixed at its lower attachment to support the weight of the body on the semi-flexed knee, being forcibly put upon the stretch during the sudden extension of the hip-joint, tore away the unossified epiphysis of the anterior inferior spinous process of the ilium. The respective ages of the patients were eighteen and nineteen years. If we for a few moments turn to the consideration of the anatomy of the parts here concerned in their healthy condition it is not difficult to understand the pathology of this injury, and a question which almost at once presents itself to us is, Why is it that we do not more frequently meet with it? The parts most immediately concerned are the rectus femoris muscle, the anterior inferior spinous process of the ilium, and the ilio-femoral ligament. Briefly, according to Mr. Roger Williams,[2] the rectus muscle is attached above solely by its acetabular posterior primary or reflected head until about the third month of fœtal life, "for up to this time the flexed position of the fœtal limb necessitates only this head, which in this position of the hip-joint is in a direct line of action." The iliac anterior or straight head is of secondary formation, and is developed from the sheath of the posterior tendon "owing to the change

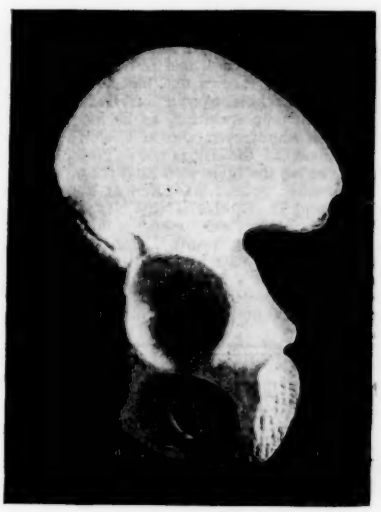
FIG. 1.



of axis of the limb consequent on the assumption of the capacity of full extension of the hip and knee."[3] The muscle acts chiefly from its straight head when the hip is extended, but from its curved head when it extends the knee during flexion of the hip. Thus in the position which was described by the patients as obtaining prior to starting—viz., that of flexion of the hip and semiflexion of the knee—the posterior head would fix the rectus above; but in the first bound of the start, when the knee-joint and hip-joint were suddenly, rapidly, and forcibly extended, the direct or straight head would come into action. This direct head, though it has been shown conclusively by Mr. Roger Williams to be developed secondarily, and to be of different histological structure (partaking more of the nature of a ligament than of a tendon) from its neighbour, is exceedingly strong in well-developed athletic and muscular subjects. The anterior inferior spine of the ilium is peculiar to the human pelvis. It is hardly to be noticed as a prominence in the higher apes. In the mammalia generally, according to Professor Flower,[4] "the acetabular border of the innominate bone is very short and has a strong rounded rough prominence for the attachment of the rectus (extensor) muscle of the leg." In the human pelvis "it serves to give a slight leverage to the rectus femoris, making some amends to that muscle for the unfavourable position in which it is placed by the erect posture."[5] The anterior inferior spinous process of the ilium is in the adult (as may be well seen in the accompanying engraving, which is from a photograph) made up by the ossification of a secondary epiphysis for the innominate bone, which makes its appearance in the fifteenth or sixteenth year, and which is consolidated at the nineteenth or twentieth year.

The accompanying figures of a macerated bone from a subject aged sixteen years were engraved from photographs. They show well the prominence, large size, and loose connexion of this epiphysis at this period. The anterior superior spine has not a distinct epiphysis for itself, but is ossified from the large secondary one common to it and the whole of the iliac crest. The ilio-femoral ligament is attached above to the inferior spine, below, blending with the capsular ligament of the hip-joint to the femur. It is obvious, therefore, that in the separation of this process the hip-joint may be affected and thus explain the discomfort which existed in extending these injured limbs, as well as the flexed position which was assumed. The nerve-supply to the muscle is the anterior crural, which gives a branch to enter its upper part posteriorly. The arterial supply originates in the external circumflex and

FIG. 2.



the femoral vessels for the most part. It will thus be seen that the above anatomical details are not here irrelevant, for the whole pathology of the injury is evident on referring to them. In these young athletic men of good muscular development, with powerful recti muscles and at the ages when the epiphyses for the spinous processes were as yet unconsolidated and thereby able to be detached, is it surprising that under the unusual and sudden strain placed upon these parts that an accident did occur? The wonder is that we do not more frequently meet with these cases among athletes. Possibly the explanation may be in the fact that "sprinters" as a rule get into better athletic training before they begin to practise "starting." In these cases the occurrence took place at the beginning of term and before the men were in proper training. The tingling feeling described in each case may be explained by a displacement of the rectus muscle in the upper part of its course, with stretching of the fascia lata of the thigh and a disturbance in the cutaneous supply of the anterior crural nerve. The comparatively small amount of swelling and bruising may be accounted for by the anatomy of the region, which is not very vascular and is well supported by muscles and the thick fascia of the thigh. This

[2] Anatomy of the Quadriceps Extensor, Journal of Anatomy and Physiology, vol. i., 1879.
[3] Macalister: Text-book of Human Anatomy, p. 488.
[4] Osteology of the Mammalia, p. 316.
[5] Sir George Humphry: Human Skeleton, p. 458.

fascia would also naturally tend to conceal an extravasation beneath it.

Remarks.—The diagnosis of these cases is by no means as easy as might be expected from this description. The history at once demanded the exclusion of the possibility of an existing hernia, and the posture of the limb suggested forcibly at first an injury to the hip-joint. The crepitation, owing to the very limited displacement allowed by the indirect head of the rectus, the fascial attachments of the parts, and the deep position of the fracture in a muscular limb, is not easily brought out. In this relationship also I would suggest that, arguing from anatomical grounds, the statements made in many of our text-books in a somewhat vague manner that "separation of both the upper and lower anterior spinous processes of the ilia occurs through muscular violence" require corroboration. The anterior superior process develops, as before stated, from the epiphysis for the whole of the iliac crest and would, therefore, require even more violence to effect its separation. Again, the sartorius muscle would seem to be neither sufficiently strong in itself nor sufficiently concentrated in its attachments to do much harm, nor is it easy to conceive of any of its actions which would pull sufficiently forcibly upon this process; and so it would appear that many of the so-called separations of the anterior superior process may have been in reality that of the above-described condition. The two cases were treated after the same manner. A plaster spica bandage, well padded, was applied, the limb being kept in a position adapted to relax the direct head of the muscle. This was retained for four weeks and then a simple spica bandage was substituted. The patients did well, and gave no trouble. The "tingling and feeling of cold water" were the most persistent symptoms in one case, and in this case a considerable amount of callus was thrown out, but notwithstanding this the patient is now able to run successfully. The other patient has "given up sprinting, as he has lost his pace." Probably in men who start in races and hold their bodies more erectly than these did the risk is not so great. By a strange coincidence, during the same week that these cases presented themselves another patient was seen at another college by Mr. Symonds and Dr. Ritchie of this city, also the result of running in a race. This was treated in much the same way, and with a satisfactory result. One might with equal propriety and probably with as little scientific spirit suggest the term of "sprinter's fracture" for this injury as those who have given expression to "rider's sprain," "tennis leg," &c., in surgical literature.

Oxford.

ON THE THERAPEUTIC USES OF EXALGINE.

BY THOMAS D. SAVILL, M.D. LOND.,
FORMERLY MEDICAL SUPERINTENDENT OF THE PADDINGTON INFIRMARY.

MY attention was called to this new analgesic by the various favourable reports that were published from time to time in the medical journals, and I decided to employ it in a certain number of suitable cases, of which there is usually no lack in an institution like the Paddington Infirmary. I have used it, not so much as a curative agent in neuralgia and allied disorders of the nervous system, as in the endeavour to relieve the pain associated with various chronic maladies. An agent which will enable the medical man to relieve even where he cannot hope to cure is necessarily one of great value, and the mitigation of pain is a thing which the patient looks to him to effect perhaps even more than the ultimate cure of the affection. Detailed notes of the various cases were kept, the particulars of which I am enabled to summarise hereafter, thanks to the kind assistance of Mr. Harold V. Prynne, who was my clinical assistant at the time.

It is hardly necessary here to dwell upon the physical characters and physiological properties of the drug; it will suffice to say that it can be readily administered in the form of a powder, especially if put up in "cachets," or it may be dissolved in water to which a small proportion of spirit has been added, or even in pure water if this be used hot. In fact, the last-mentioned method of administration is, on the whole, the most convenient one, for if six fluid ounces of boiling water are poured on to forty-eight grains of the crystals a clear solution containing eight grains to the fluid ounce is formed, which does not precipitate on cooling; a teaspoonful of this solution thus represents one grain of the dry salt. This keeps well, is devoid of disagreeable smell or taste, and is in every way reliable. It will be seen that the diseases for which the patients were under treatment were various; and, speaking generally, it may be affirmed that in no instance did the drug give rise to any inconvenient or uncomfortable effects even in the presence of cardiac disease or phthisis, nor did it determine any of the symptoms of intoxication which seem to have been manifested in the hands of other observers. These symptoms may perhaps be attributed to an overdose or to some idiosyncrasy on the part of the patient; and I think that, if care is taken not to administer the drug to patients with a febrile temperature or who are constipated, no ill-effects are ever likely to be experienced. These are, at any rate, the conclusions which I have drawn from my perhaps somewhat limited experience.

CASE 1.—A woman aged fifty-eight years, suffering from carcinoma uteri, had severe attacks of abdominal pain of a dull, continuous character, interfering with rest and nutrition. She was given two grains every two or three hours. No effect was produced on the sleeplessness, but the relief to the pain was immediate and marked. Later it was found to be necessary to increase the dose to three grains, but no tolerance seemed to be established towards the drug, and relief was afforded as long as it was persisted in. No giddiness or other disagreeable after-effect was ever complained of.

CASE 2.—A woman aged twenty-eight years suffered from neurasthenic cephalalgia of long standing, the pain being dull, severe, and continuous. She was given one-grain doses three times a day, immediate relief being afforded to the headache. Sleep, which had previously been disturbed and uncertain, became calm and refreshing, and she was soon convalescent.

CASE 3.—The patient in this case was a woman aged seventy-four years, who suffered from rheumatic arthritis. She complained of severe neuralgic pains in the head and face, with a tendency to radiate in various directions. I gave her two grains of exalgine every hour, and she experienced marked relief within a short time of the first dose. It was subsequently found to be necessary to increase the dose in order to maintain the effect, but, this having been done, her condition was markedly ameliorated.

CASE 4.—A woman aged sixty-three years, suffering from cardiac valvular disease, had complained of intense paroxysms of pain over the brow; this was of a continuous "stabbing" character, subject to periodical exacerbations. Sleep was not interfered with, as a rule. She was given one grain three times a day and was speedily relieved of this particular manifestation.

CASE 5.—This case was one of chronic phthisis associated with multiple neuritis together with neuralgic manifestations specially affecting the head and eyes; the pain was continuous, but, as in the preceding case, subject to periodical exacerbations. She was ordered two grains of the drug every two hours, but though the suffering became less acute—that is to say, the exacerbations were apparently prevented—complete relief was not obtained even on pushing the remedy. This patient suffered from sleeplessness, and a marked improvement was observed in this respect.

CASE 6.—This was another case of cardiac valvular disease, occurring in a woman aged forty-two years, who suffered a great deal from periodical attacks of shooting pain in the head and neck. The administration of occasional doses of two grains of exalgine effectually relieved the attacks as they occurred, and this within a very short space of time.

CASE 7 was an interesting case of traumatic epilepsy in a man aged forty-four years. He had undergone cerebrectomy for the relief of the epilepsy, after which he suffered from spastic hemiplegia associated with sensory manifestations chiefly in the head, right knee, and right hand, of a lancinating character. The pain effectually prevented sleep, and the patient was in a most miserable condition. I ordered him one-grain (subsequently increased to two-grain) doses of exalgine, to be taken every four or five hours; after the first two doses he experienced considerable relief, the attacks of pain being less frequent and less severe. I did not, however, succeed in abolishing the painful manifestations altogether. The insomnia was improved while he was taking the drug, doubtless by reason of the relief afforded to the painful symptoms. This patient complained of slight headache after taking the drug, but it is doubtful how far

this was the result of the medication, seeing that it ceased to be complained of when the dose was increased six weeks later.

CASE 8.—A man who suffered from gouty arthritis associated with peripheral neuritis complained of continuous and severe pains in the feet and along the vertebral column. Under the influence of two-grain doses of the drug administered every three or four hours the vertebral pain disappeared, but the pain in the feet was not appreciably diminished even under larger doses of the drug.

CASE 9.—An old man aged seventy-two years was admitted to the infirmary suffering from morbus coxæ. He was one of the patients attacked by the "epidemic skin disease" then prevalent in the infirmary, after which he complained of occasional attacks of severe "jumping" pain in the head and eyes. He was given two grains of exalgine twice a day, and the attacks became less frequent. The dose was subsequently increased at the expiration of ten days, with very satisfactory results.

I have notes of a number of other cases in which the drug was tried, in some instances with more or less marked benefit. I will, however, limit myself to three cases in which little or no relief was obtained, because it is useful to know the class of cases in which the drug does not yield satisfactory results as well as those in which its administration is attended with an amelioration in the painful manifestations.

CASE 10.—One such case was that of a male patient aged sixty-five years, suffering from morbus coxæ, to which was superadded an attack of the "epidemic skin disease" mentioned above. He complained of continuous "boring" pains in the left hip, which were occasionally of intense severity. Doses of two grains and upwards seemed to procure some slight alleviation of the symptoms, but did not bring the pain within bearable limits. No uncomfortable effects were experienced even after comparatively large doses.

CASE 11.—In a case of renal disease with anasarca and sciatica exalgine was given in order to relieve the sciatica with which the patient was troubled. The pain was very severe, but doses of two grains and upwards failed to afford any relief, and the exalgine was ultimately discontinued.

CASE 12.—The last case which I shall mention was one of old fracture of the femur in a man aged seventy-six years, who was the subject of rheumatic arthritis. He complained of severe occasional shooting pains in the hips which prevented sleep. Two grains of exalgine administered at bedtime failed to mitigate the pain, and in the absence of beneficial effects its administration was ultimately abandoned after a fair trial.

It will be seen that in all the cases the symptom for which exalgine was administered was pain, varying, as the notes have shown, in position, constancy, character, and intensity. In many of the cases it was situated in the head and was of a more or less neuralgic character. In four cases the pain complained of was in the hips, and in only two of these was any improvement noted. In the other cases the pain was referred to the skin, corresponding more or less with the distribution of a particular sensory nerve.

The cause of the neuralgia was in most cases sufficiently obvious, but in Case 7 it was more obscure. In this case the patient was a man who suffered from tonic muscular spasm of the right arm and leg, due to descending lateral sclerosis which ensued after an operation four years previously, which had relieved him of his epileptic fits. He referred the pain to the skin over the wrist and ankle-joints, sometimes to the joints themselves, and he described it as "shooting up the limbs." The pain seemed to be closely connected with the muscular spasm. He always obtained relief, though it was only temporary.

With regard to tolerance it was noted that in six of the cases where the cause of the pain was persistent the dose had to be increased, and exalgine did not seem to be altogether free from the disadvantages that attend the use of all drugs of this class—viz., the necessity to increase the dose or to change the remedy from time to time.

It may be mentioned that all these cases had been in the infirmary for some time, so that their relief could not be due simply to their improved surroundings.

I think one is justified in anticipating that in exalgine there exists a valuable analgesic specially adapted to relieve pains of a neuralgic type, being prompt and efficacious in its action and without any of the deleterious after-effects observable in some of the other drugs belonging to the same chemical group, but of which the dose requires to be occasionally increased if the drug is continued for a long period.

Upper Berkeley-street, W.

BRIEF NOTES OF SEVERAL CASES OF

ACUTE DIARRHŒA TREATED WITH KERATIN-COATED CARBOLIC ACID PILLS.

BY JOHN RITCHIE, M.B., C.M. GLASG.

CASE 1.—A married woman, the subject of chronic bronchitis, had an attack of diarrhœa in September, 1892. The attack was not very severe, but in her feeble state serious weakness ensued. The usual astringents failed to do more than temporarily check the pain and diarrhœa. Carbolic acid pills (2½ gr.) coated with keratin were then given every three hours. After five or six pills had been taken the symptoms subsided, and further treatment was unnecessary.

CASE 2.—A man was attacked at 7 P.M. on June 14th last with vomiting, diarrhœa, and painful cramps in the legs. When seen about 12 midnight his pulse was feeble, his face pinched, and his voice husky. Carbolic acid pills (2½ gr.) were ordered, and were commenced about 1.30 A.M. The pills were taken every three hours until eight had been given. The last loose motion occurred at 6 A.M. on the 15th, but the cramps did not pass off till about mid-day. When asked how many loose motions he had had, the patient said that he could not exactly tell. I asked him if I could assume that there had been at least twenty, and he replied, "That number, any way." It was with difficulty that he could be kept from his work on the 19th.

CASE 3.—An unmarried woman attended to her usual duties on June 5th last, though she complained of headache. She came home feeling chilly, and went to bed about 7 P.M. Shortly afterwards she had a severe rigor. The bowels were very loose nearly all night. Then, and once thereafter, she took laudanum of her own accord, with the effect of partly controlling, and of subsequently masking, her symptoms. When first seen on the 6th she was so weak that it was thought advisable to administer compound spirit of ether. The looseness of the bowels persisted till the 8th, except when the patient had opium, as above noted. On this day she began to take carbolic acid pills (2½ gr.) and had one every three hours. The symptoms subsided after nine pills had been taken.

CASE 4.—A married woman suffered from severe looseness of the bowels on June 12th last. While coming from the bath-room she fell down in a fainting condition, and was with some difficulty revived and put to bed. She was first seen on that afternoon soon after the fainting fit, and complained of acute pain in the abdomen. The temperature was over 102° F. Six carbolic acid pills (2½ gr.) were administered in all. When next seen she reported that she had neither looseness of the bowels nor pain. The temperature was normal.

CASE 5.—A married woman had a moderately acute attack of diarrhœa; the pulse was rapid and the tongue was white, tending to become brown, and there were intense thirst, some vomiting, and a temperature of 103° F. Treatment for three days had no effect. Carbolic acid pills were given one afternoon, and on the following morning she was much better. After nine pills had been taken it was found that the temperature was normal, and that the urgency of the case had passed off. The patient speedily recovered.

CASE 6.—In this case a married woman, when she was first seen, said that she was "vomiting everything," was in great pain, and had frequent loose motions, accompanied by blood. The pills were commenced about 1 P.M.; about 8 P.M. she stated that the pain had ceased and that she had vomited once, while there had been two motions only. On the next day she said that she felt nearly well.

There were several other cases of rather sharp diarrhœa, all of which seemed to derive benefit from the use of carbolic acid pills. In no case was the urine discoloured by their administration. As a rule six pills proved to be sufficient, and in no case were more than twelve required. Pain, whether in the abdomen or in the legs, was speedily removed, and in the cases in which the temperature had been raised a speedy lowering occurred.

Buccleuch-street, Glasgow.

REMARKS ON ALOPECIA AREATA.[1]

BY PHINEAS S. ABRAHAM, M.A., M.D. DUB., B.Sc. LOND., F.R.C.S. IREL.,
PHYSICIAN TO THE WESTERN SKIN HOSPITAL, LONDON, ETC.

THE diagnosis of alopecia areata is a matter of no difficulty in the majority of cases; but it is not invariably easy to isolate it clinically and pathologically from certain other affections of the hairy parts. More than one distinct disease, in fact, may have alopecia areata as a prominent feature or symptom. A localised alopecia, too, may result from external pressure or friction, as on infants' heads from pressure of the pillow, on ladies' heads in the days of the "chignon," and on men's shins just above the boot, as was pointed out to me by Mr. Rickard Lloyd. The literature of the affection from the time of Willan and Bateman onwards is instructive from more than one point of view. As with many other diseases, we find that great authorities from time to time publish some observation, or supposed observation, and, proceeding from the particular to the universal, forthwith enunciate a general theory, under which, of course, all cases must be made to fall. Although certain cases, as shown by M. Brocq, are the result of a folliculitis or perifolliculitis, no prior pustulation is met with in the vast majority of them, as was formerly believed. Again, the general belief in the specific fungus "microsporon Audouini" as the cause of alopecia areata lasted for years, in consequence, no doubt, of the common tendency of our profession to accept without personal investigation or corroboration all that our great men may say. There are still persons who believe that all cases of alopecia areata are of parasitic origin, and others who hold that all cases are neuropathic; but accurate observers in all parts of the world are more and more admitting that, while some are undoubtedly neurotic, many cases can only be explained on a parasitic hypothesis. Since Mr. Hutchinson and Dr. Radcliffe Crocker published their novel view that the majority of the cases of alopecia are etiologically related to common ringworm of the scalp I have as far as possible investigated the histories of 137 cases of alopecia areata, and have examined microscopically a considerable number. In no case which did not show other evidence of the affection being really tinea tonsurans could a trichophyton be found, and for some time it appeared to me that in comparatively few instances could a history of previous ringworm be obtained. The evidence as to this latter point seems, however, to be increasing, and the statistics now presented undoubtedly lend some support to Mr. Hutchinson's and Dr. Crocker's theory. It is apparent, indeed, that in no less than forty-four instances, or 32 per cent. of the cases, there had either been a previous history of ringworm in the patient or other members of the family, or persons more or less in contact with the patient had been at some time or other affected with that disease. [Dr. Abraham gave short notes of thirty-seven of these cases.] There are certainly cases, on the other hand, in which no connexion with ringworm can be traced, and I can relate one, at least, in which I know and can vouch for all the facts. The question of the possible contagiousness of alopecia areata is also illustrated by my figures. In twenty-seven of the 137 cases there is a clear history of other members of the family or intimate friends having been affected with alopecia; but some of them are of very doubtful value in proving contagion, for the individuals have been affected at very different periods of time—years sometimes intervening—or after they had been long living apart. Instances are referred to of the occasional occurrence of epidemics of alopecia areata, as noted by Bateman, the French writers, by Hillier, and others. Quite recently a somewhat analogous series of cases which occurred in an orphanage came under my notice, which, in accordance with our preconceived notions, may be taken either to show that at times alopecia areata is a very contagious disease or that that affection and common ringworm of the scalp are practically due to the same cause. Four boys were brought to me at the Western Skin Hospital with bare patches on the scalp. The patches were quite smooth and white, with a few short hairs with atrophic roots around the margin and some loose atrophic hairs outside; no fungus could be found. The history was as follows. A boy fourteen years of age (the patient was shown at the meeting) had ringworm four years ago and was said to have been cured. Bald patches commenced to appear about a year since. He shortly afterwards entered the orphanage and was passed as having no contagious disease. Since his admission eighteen of the boys of a total of twenty-two in the establishment had developed similar bald patches, and in most of them the hair had grown again under the influence of stimulating applications. During the spring of this year two other boys in the house showed signs of common ringworm; and within the last few weeks another boy (this patient was also shown) had undoubted tinea tonsurans. Three weeks ago the matron informed me that she, too, "had caught the disease"; and I found on her head three small round patches of commencing alopecia, without broken or clavate hairs, but with many loose hairs around with atrophied roots. In this case, too, no trichophyton could be demonstrated. She remembered that on one occasion she was interrupted before washing her hands after attending to the boys' heads, and she thinks that she then touched her head. There was slight itching before the hair began to fall. For a long time I have observed that certain persons suffering from alopecia areata had been the subjects of extensive seborrhœa, and I agree with M. Brocq in thinking that some cases may be the sequel to that affection. The case of a woman with multiple patches was a marked instance; I found that several other members of her family had extensive seborrhœa. Comparatively few (only thirteen) of the 137 cases gave a history of neuralgia or previous neuroses, and in those who complained of severe headaches I have just as frequently found the short clavate hairs as in the others. I am aware that this is not in accordance with the views generally expressed. One of my cases illustrates this point. This patient is the mother of nine children, and none of them have ever had ringworm or alopecia; nor does she know of anything of the kind among friends. One of her patches is very depressed and scarlike, and shows club-shaped hairs at the borders; a smaller patch shows evident folliculitis. She had been out of health for some years, and suffered much from severe headaches; there was also extensive seborrhœa.

With reference to treatment, parasiticidal ointments and the cautious occasional application of Burt's fluid are, I believe, serviceable in a majority of the cases. I have by these means seen alopecias cured which had lasted for years and were apparently hopeless. I frequently use a carbolic and salicylic acid ointment, and sometimes intermit with lotions like the "lotion excitante" of the St. Louis Hospital. I always treat the seborrhœa if present. When I want to impregnate an area of scalp with a germicidal fluid I am now trying an apparatus made for me some months ago by Messrs. Maw, Son, and Thompson, which is constructed on the principle employed in creasoting logs of wood or railway sleepers. A partial vacuum is first produced over the diseased part, which has been previously epilated, shaved and washed with soft-soap, alcohol, and ether; the germicide is then let in under the influence of the atmospheric pressure. It is curious to observe how the spots implicated come into view by a manifest localised hyperæmia of the subjacent cutis, a fact of some pathological significance. I have only been able to use this method in a few cases, and I can say but very little at present as to results.

[1] Abstract of a paper read before the West London Medico-Chirurgical Society on Nov. 3rd, 1893.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF FRACTURE OF THE BASE OF THE SKULL; RECOVERY.

BY DAVID LIVINGSTONE DAVIES, M.R.C.S. ENG., L.R.C.P. LOND.,
SURGEON TO THE FESTINIOG QUARRIES; LATE ASSISTANT MEDICAL OFFICER TO THE BOROUGH ASYLUM, NOTTINGHAM.

THE following case appears to be worthy of record, showing as it does the not altogether unfavourable prognosis of cases of fractured base occurring in elderly people.

A woman fifty-six years of age was sitting on the shore at the foot of some cliffs about 3 o'clock in the afternoon on Aug. 10th, 1893. Two little boys who were with her climbed up the cliffs to the height of about 40 ft., and in doing so one

of them dislodged a stone of flint weighing nearly 15 lb.; this came rolling down and struck the woman in an oblique direction on the cranium at a point three inches above the base of the mastoid process of the temporal bone on the right side, from there glancing to the acromial end of the clavicle on the same side. When I saw her a few minutes after the accident she was lying in an unconscious state on the sand, bleeding from the right ear, and vomiting a dark fluid, consisting mostly of swallowed blood. She was carefully removed to the nearest house and put to bed. She had all the signs of concussion, the body being cold, the pulse slow and feeble (40 per minute), the respiration slow and sighing, and the pupils contracted. A hæmatoma formed over the part struck, and a fracture extending downwards and across the base of the skull through the petrous portion of the temporal bone was diagnosed. A few hours after the accident I had a consultation with Mr. Hunter Hughes, who confirmed my diagnosis.

The treatment briefly consisted in keeping the room darkened and perfectly quiet, applying ice to the head, hot-water bottles to the feet, giving fluid nourishment in the form of meat juice, syringing the ear with weak carbolic lotion, and then blowing in some boric acid and iodoform. The bowels were kept regular with five-grain doses of calomel every other day. A little brandy and milk was given for the first few hours in order to stimulate the heart, which was very weak. During the last two weeks she was allowed a little light wine and took a mixture of citrate of iron and ammonia with compound spirit of ammonia for the anæmia which resulted from the loss of blood. It will, perhaps, be observed that the ear was not plugged in order to arrest the hæmorrhage. I believe that in treating a case of fractured base of the skull it is wiser to allow the blood to escape externally. Many of the books which I referred to advise plugging the ear in order to arrest the hæmorrhage. I feel sure that had I done so, as I was at first inclined to, the hæmorrhagic attacks which she had would have produced fatal compression.

The after-course was uneventful; the patient recovered consciousness in three hours, and vomiting ceased in about twelve hours. After recovering consciousness she complained of pain in a line downwards from the point struck, probably along the line of fracture. There was acute tenderness for about ten days along this line. She took nourishment well and after the first two or three nights slept well. She had attacks of hæmorrhage from the ear on several occasions during the first three weeks, and some cerebro-spinal fluid oozed for the first week. She complained very much of pain and inability to move the right shoulder, but nothing more than a severe contusion could be detected, and this was well in three weeks. Some days after the accident she complained of tasting blood in her mouth, which she said made her feel sick. On examination blood could be seen slowly trickling through the orifice of the Eustachian tube. The patient gradually regained strength, so that on Sept. 21st, nearly six weeks after the accident, she was able to undertake the journey home to London, a distance of more than 200 miles from here. I have recently heard from her that she feels well and has no pain or headache.

Preswylfa, Criccieth, North Wales.

SCARLET FEVER AND ENTERIC FEVER.

By S. A. E. GRIFFITHS, M.R.C.S. Eng., L.R.C.P. Lond.

DURING an epidemic of scarlet fever at Irthlingborough I had four patients from one family who developed enteric fever at the same time as, or very shortly after, they were affected with scarlet fever. I thought that the co-existence of two acute diseases, such as scarlet fever and enteric fever, in the same patient at the same time was of sufficient rarity to warrant my recording it.

CASE 1.—A boy aged eleven years was notified by me as suffering from scarlet fever on June 26th. The fever apparently for the first three days ran a fairly normal course, but the boy appeared to be rather more dull and restless than is usual with an ordinary case of scarlet fever. On the fourth day (June 30th) the temperature was 103° F., having only varied a degree or so from the first. Instead of the temperature falling, there was a tendency for it to rise. I suspected that the boy had developed pneumonia. I carefully auscultated the chest, but detected nothing abnormal. At this time (the 30th) the tongue had gone through the stages usually seen in a well-marked case of scarlet fever, from being covered with white fur to a dark-red glazed appearance. The next day (July 1st) the tongue was again coated with fur (slightly) and in the course of the next two days assumed the characteristic typhoid appearance. Diarrhœa set in, with typhoid stools. On July 3rd I re-notified the case as "enterica previously affected with scarlatina." Desquamation had already commenced and was very marked. On July 4th the case was seen with me by Mr. Burland, who confirmed my diagnosis. On July 6th sudamina appeared, more especially over the chest, abdomen, and thighs. The temperature continued to be rather high for the first fortnight, varying between 102° and 104°. The enteric fever ran a fairly normal course; spots appeared on the abdomen and lower part of the chest; the spleen was not markedly enlarged. From July 3rd to the 10th the boy was very delirious, being with difficulty kept in bed; he suffered great pain in his head. I gave him antipyrin and had him sponged with cold water every hour, from which he derived great relief. Convalescence was much delayed by relapses. His sister, who developed enteric fever during his convalescence, was even more delirious than her brother. On two occasions he was very much frightened by the delirium of his sister, relapses occurring. One day the temperature ran up to 105° from normal. The house was so small that it was impossible to have the patients in separate rooms.

CASE 2.—The sister of the above patient, aged thirteen years, was notified as suffering from scarlet fever on July 15th. It ran a typical course; the glands in the neck were much enlarged and suppurated on the right side. An incision was made, the abscess causing difficulty in breathing. She developed enteric fever on July 27th, which was notified. This patient had a very poor constitution and was very delirious. It was almost impossible to keep her in bed. When she was quiet the delirium was low and muttering. I gave her antipyrin and large quantities of brandy. The temperature varied between 102° and 105° F. Diarrhœa was severe at times. The abscess discharged the whole of the time up to her convalescence; it was impossible, owing to her state, to attend to it at times.

CASE 3.—Another sister, aged three, was notified as suffering from scarlet fever on July 19th. This child was much debilitated and suffered from the effects of acute poliomyelitis in infancy. She was much prostrated from the scarlet fever and developed enteric fever on July 30th, which was notified. The temperature was 105° F. I ordered cold spongings every hour and antipyrin. Although the temperature fell a couple of degrees it again rose. The child died on the next day from exhaustion.

CASE 4.—A third sister, aged seven, was notified with scarlet fever on July 19th and with enteric fever on Aug. 1st. This patient had both the fevers mildly.

Remarks.—In the first case the difficulty of diagnosing the second fever was great on account of the more acute symptoms of scarlet fever masking those of enteric fever, and, although on the fourth day I felt sure in my own mind that there was a second febrile disease underlying the scarlet fever, yet I hesitated before re-notifying (for by this one's diagnosis is made) till the more acute symptoms of scarlet fever had passed off. In the four cases the longest interval between the two fevers was thirteen days, and it is curious that in the last three cases the period was nearly the same—viz., eleven, twelve, and thirteen days. This would agree with the incubation period of ten to fifteen days. It is quite possible that when each was affected the two "poisons" were combined and that the scarlatinal poison had almost or entirely run its course before the other showed itself. Be this as it may, there is no doubt that the enteric "poison" was in the system of each during the scarlatinal course. In the case of the boy the two fevers practically ran concurrently; this, according to THE LANCET of Nov. 4th (p. 1149), appears to be possible. It will be of interest to add that another member of this family was affected with scarlet fever only.

Irthlingborough.

EXCEPTIONAL CASES OF SCARLET FEVER.

By DUNCAN J. CADDY, M.B.

CASE 1.—On May 30th of this year I was called to see a child aged two years and five months. The mother stated that six days previously she had taken it to see her sister's children, one of whom was ill in bed with scarlet fever, but

that the child had not been allowed to approach this one. Two days previously the child had a rigor, was very sick, and complained of a sore throat and bad headache, and on the morning on which I was sent for a rash had come out all over its body. Upon examination I found the child flushed and restless, with the temperature 101° F., the pulse 110, strong, and full, and the usual strawberry tongue. The tonsils were inflamed, the glands at the angles of the jaws were tender and slightly enlarged, and the child was covered with a uniform red rash. The case went on well until the eighth day, when the face became puffy, and upon examination the urine was found to contain a trace of albumen. The patient was treated and dieted accordingly, and the case henceforth progressed favourably, desquamation commencing on the twelfth day and lasting for about fourteen days. On Aug. 14th I was again called to see the same child, and I found it in the following condition: the temperature was 103°, the pulse was 120, full, and bounding, the face was puffy, the hands and feet were œdematous, the glands at the angles of the jaws were much enlarged and very tender, the tonsils were enlarged and ulcerated, and a very pronounced bright red uniform rash covered the whole of the body. The mother informed me that, believing her child would not be liable to catch scarlet fever (having had an attack so recently), she had allowed it to play with another child who was recovering from scarlet fever, and that this was the result. The urine was loaded with albumen, and the child's temperature rose to 104·5°. Desquamation commenced on the tenth day, and the child has since progressed favourably and is now quite well.

CASES 2 and 3.—On Sept. 8th, 1892, I saw a youth aged sixteen years, who complained of a sore throat and headache accompanied by vomiting and rigors. The next evening he was covered by a bright red rash, and his pulse was 100 and temperature 100·5° F. He passed through the stage of desquamation, but had not finished on Sept. 31st, on which day his sister, aged six years, was taken ill with similar symptoms and had a severe attack of scarlet fever, which was accompanied by nephritis, her urine being loaded with albumen. Both cases progressed favourably, desquamation occurring, and the lad became quite well; but when I last saw the girl, about two months after her attack, she still had a trace of albumen in her urine. On Sept. 1st, 1893, I was sent for to see the girl again. Her temperature was 103°, the pulse 125, the tonsils were enlarged and inflamed, the glands at the angles of the jaws were enlarged, and the patient was delirious. She was covered with a red rash, and remained in a precarious condition for three weeks. Desquamation was very pronounced, some of the scales being exceptionally large. On the 14th her brother was taken ill with the same symptoms, but his temperature this time rose to 103·2° and his pulse was 180; he, however, had no albuminuria, but was very scarlet from his face downwards, and suffered greatly in his throat. Both patients have since done well, and although the girl still has a trace of albumen in her urine the lad is almost well.

I consider these cases worthy of attention as showing that sometimes, at all events, an attack of scarlet fever does not act as a preventive to a second attack after even a very short interval.

Earl's-court-gardens, S.W.

A CASE OF FIBRO-SARCOMA OF THE ORBIT.

BY R. H. ELLIOT, F.R.C.S. ENG., M.B., B.S. LOND., D.P.H. CAMB., &c.
SURGEON-LIEUTENANT, INDIAN MEDICAL SERVICE.

ON July 31st, 1893, a middle-aged native woman was admitted to the Civil Hospital, Secunderabad, and was [by the courtesy of Surgeon-Lieutenant-Colonel Fawcett, I.M.S., placed under my care. Five or six months previously she had been struck over the right eye, and from that blow she dates the commencement of her present symptoms—viz., shooting pain around the eye, loss of sight in it, and exophthalmos. On admission the condition of the patient's right eye was as follows: there was pronounced exophthalmos, the conjunctiva was congested and chemosed in its lower half; there was no evidence of inflammatory changes within the eye; tension + ? The lens was somewhat opaque, the anterior chamber was shallow, and vision was absent. She denied perception of light. There was some enlargement of the veins in the supra-orbital and temporal regions, with puffiness of those parts. The left eye was normal. On July 31st the patient was placed under chloroform and, kindly assisted by Surgeon-Lieutenant-Colonel Fawcett, I.M.S., and Surgeon-Captain Giffard, I.M.S., I enucleated the eyeball and then proceeded to clear out the cavity of the orbit down to the periosteum. This was greatly facilitated by the division of the external canthus upwards and downwards by a V-shaped cut. The whole orbit was found to be filled by a dense growth, which had replaced all the natural structures and was evidently a fibro-sarcoma, originating probably in the orbital connective tissue. Having dissected the mass back to the apex of the cavity, the stump that was left was touched with chloride of zinc lotion (twenty grains to the ounce), a sponge plug was put in, and antiseptic dressings were applied. The patient made a good recovery, the cavity filling up extremely well, and when the woman was last seen, early in October, she presented no signs of recurrence.

The granulating mass seemed to be covered with a kind of mucous membrane, but was yet very sensitive to cold or draught. This at first caused some uneasiness, as the pains in the head resulting from such catarrhs were at first feared to be due to cerebral growths. Protection of the parts, however, had the satisfactory result of relieving anxiety on this head. Seeing Dr. W. J. Collins' cases in THE LANCET of Sept. 16th, 1893, I thought it might be of interest to place this case also on record.

Bellary, India.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

KING'S COLLEGE HOSPITAL.

HYDATID CYST OF THE ANTERIOR MEDIASTINUM PERFORATING THE THORACIC WALL; REMARKS.

(Under the care of Mr. WILLIAM ROSE.)

ALTHOUGH the formation of hydatid cysts in the mediastinum is not unknown, still it is an occurrence of extreme rarity in this country, and the account of the following case will be read with attention. Dr. Hare, who wrote on the subject of Mediastinal Disease, gives a summary of recorded cases, comprising 134 of cancer, 98 of sarcoma, 115 of abscess, 16 of non-suppurative inflammation, 21 of lymphoma, 7 of fibroma, 6 of hæmatoma, 11 of dermoid cysts, 8 of hydatid cysts, and 104 of various mediastinal diseases. He came to the conclusion that the anterior mediastinum is affected far more frequently than are the other two spaces, and that most mediastinal growths occur in adult males. Hydatid cyst of the lung is a far more common disease, though it is also very difficult to diagnose. It is rather strange that a cyst in this position, behind the resistant wall of the thorax, and of such a size, did not produce more trouble than the patient appears to have experienced. For the notes of this case we are indebted to the late house surgeon, Mr. W. R. Smith.

A domestic servant twenty-five years of age was admitted to King's College Hospital on Oct. 11th, 1893. The patient was born, and had lived most of her life, in the country. She was single and had always enjoyed good health, with the exception of an attack of bronchitis six years ago which laid her up for a fortnight. Her father and mother are alive and well. She has four sisters and one brother, all healthy. Six years ago, after her recovery from bronchitis, she one day noticed a small lump about the size of an acorn just above her right breast. It steadily increased in size, but never gave her any pain or inconvenience. There had been no cough or respiratory embarrassment, and it was simply on account of the increasing size of the lump that she sought advice. On admission she presented a well-nourished, but somewhat anæmic appear-

ance. A uniformly smooth, hemispherical swelling, tense and elastic, was to be felt to the right of the median line and over the sternal ends of the second and third ribs. Commencing about a finger's breadth from the clavicle, it extended to the lower border of the third rib below, touching the sternum internally, and measured three inches transversely and nearly the same vertically. The skin over it was unaltered in appearance and freely movable upon the tumour. On digital examination a sensation of fluctuation was detected, and although the swelling allowed of slight movement it appeared to be firmly attached to the subjacent structures. It was quite unconnected with the breast, and the fibres of the pectoralis major seemed to be stretched over it. There was no impulse on coughing, and the respiratory and heart sounds were normal. No swelling could be detected in any other locality. On Oct. 16th the patient was anæsthetised with the A.C.E. mixture. A transverse incision about three inches long was made over the most prominent part of the tumour, and the skin and fascia were carefully cut through; the fibres of the pectoralis major, which were thinned and expanded over the swelling, were separated, and the margins of the wound were kept aside by retractors. On attempting to isolate it from the underlying attachments the tumour gave way, and a quantity of clear colourless fluid escaped, leading at once to the suspicion that a hydatid cyst had been opened. It was now found to extend between the second and third ribs deeply into the mediastinum, leading to a cavity large enough to hold about ten ounces of fluid; the sternum and contiguous ribs were slightly eroded. The fluid was evacuated, and the inner gelatinous lining membrane was easily removed by forceps without any hæmorrhage; the cavity was gently sponged with small sponges wrung out in a 1 in 40 carbolic lotion, and two long strips of cyanide gauze impregnated with the iodoform and glycerine emulsion were left in it, the superficial wound being dressed with gauze and wool in the ordinary way. After the operation the patient was very comfortable. The wound was dressed the next day, and there was a good deal of blood-stained discharge; the stuffing was gently removed, and fresh portions were cautiously inserted. This treatment was continued daily until the sixth day, when at 3 P.M. the patient, who was sneezing and leaning forwards to speak to a friend, suddenly noticed that her dressing was soaked with bright-coloured blood. Two minutes later it was removed, and a large quantity of blood just coagulating was found under it, soaking her garments, and there were some clots in the bed. As the bleeding had then apparently ceased the deep plugs were not interfered with, but an extra strip was gently inserted and a fresh superficial dressing was applied. The patient was kept perfectly quiet and in the horizontal position. There had been no cough or dyspnœa during this time, and the temperature, which during the whole week had never been above 99·2°F., was then 97°; it rose to 99·3° the next morning and subsequently followed a normal course. The next day, on Mr. Rose's visit, the stuffing was all carefully removed, and the wound was gently syringed out with a 1 in 60 carbolic solution; it was quite sweet. Mr. Rose introduced his index finger and could distinctly feel the beating of the innominate artery at the bottom of the cavity. A small drainage-tube was inserted instead of the stuffing, and the wound was redressed. Subsequently it was daily gently syringed out and there was no further hæmorrhage; the tube was gradually shortened, and the cavity slowly contracted and healed without further complications. Microscopic examination of the cyst wall revealed the presence of several daughter cysts adherent to it, showing the characteristic scolices within them; the laminated appearance of the cyst wall was also clearly seen.

Remarks by Mr. ROSE.—This case seems worthy of being recorded alike on account of the rarity of hydatid disease in the anterior mediastinum, the absence of intra-thoracic pressure symptoms, and the difficulty of diagnosis previously to either operation or exploration. The existence of a perforation through the thoracic wall communicating with a cavity within was not suspected, as there was no impulse on coughing, and the case was looked upon prior to operation as being either a perichondrial cyst or a chronic abscess. With regard to the hæmorrhage occurring on the sixth day, it was at first feared that septic contamination had occurred; but the subsequent progress of the case, as also the condition of the dressings, negatived such a hypothesis. It was probably due to the rupture of one of those arterial twigs which arise from the innominate artery in this region and to the altered condition of pressure brought about by the evacuation of the cyst contents.

KIDDERMINSTER INFIRMARY.

A CASE OF MALIGNANT PUSTULE TREATED SUCCESSFULLY BY EXCISION, AND THE EXTERNAL AND INTERNAL USE OF IPECACUANHA.

(Under the care of Mr. W. H. MOORE.)

PUBLIC attention in London has been recently drawn to this disease on account of the fatal ending of one or two patients affected with it. We have published a case of severe anthrax in the "Mirror," which was under the care of Mr. Davies-Colley at Guy's Hospital,[1] and in which the treatment by means of ipecacuanha, given internally and applied externally, was successfully carried out. This treatment was first recommended by Dr. Muskett in 1888,[2] who wrote highly of its usefulness after his employment of it in fifty cases; in these the results had been uniformly good. Ipecacuanha has no influence on the spores, although it is fatal to the bacilli anthracis; the former are not, however, found in the development of the disease in the human body.[3] Others have, however, written very strongly in favour of other methods of treatment—for instance, Jarnovsky reported seventy-two cases of anthrax, all of which were successfully treated by injections of carbolic acid, and Scheffer and Stritzner have recorded results as being favourable. There is an impression that the disease is on the increase, but it is difficult to prove this. We think that the medical practitioner of the present day is better able to recognise it, and many cases are sent to hospitals for treatment which were formerly looked upon as being due to blood poisoning and attended at home. For the notes of this case we are indebted to Mr. P. E. Davies, house surgeon.

A lad seventeen years of age was admitted into the Kidderminster Infirmary at 1 P.M. on Sunday, July 30th last, suffering from malignant pustule. He had always enjoyed good health. His occupation was that of a "creeler" at one of the local carpet mills, and he slept with a brother who was a woolsorter. Nine days before admission, whilst at his work, the patient accidentally knocked his forehead against some ironwork attached to the loom. The blow was not severe; in fact, he would not have noticed it had it not been for the subsequent history of the case. As far as he could recollect the skin was not broken. Nothing was noticed until the following Wednesday, when he discovered a red pimple on the site of the previous contusion. He attached no importance to it, as he felt perfectly well. On the following day he noticed that the parts about the right eye were swollen and the pimple had "burst"; he also felt "queer." On the following day the swelling had increased considerably, so that he could not open his right eye; he still had no pain in the affected part, but he felt ill and weak. He consulted Mr. Moore, and whilst in his consulting room had a severe attack of syncope. He was advised to go into the hospital.

On admission the patient looked ill, the pulse was 104 (soft), the skin was moist, and the temperature was 101°F. On the right side of the forehead, about one inch above the orbital ridge, there was a swelling measuring about an inch and a half in diameter; the centre of this swelling was occupied by a dry, black slough about the size of a pea; around this was an incomplete ring of vesicles, which for the most part merged into each other; outside this was an inflammatory zone about one-sixteenth of an inch in diameter; the surrounding tissues for some distance felt brawny and indurated; both eyelids were extremely œdematous, the right being closed; the glands at the angle of the jaw on the affected side were much enlarged, and the skin over them was tense and shiny. There appeared to be a general swelling of the neck, and the patient stated that his chest was swollen, but no œdema of the chest wall could be detected. There was an entire absence of pain and no local tenderness or suppuration. The serum from the vesicles showed well-marked anthrax bacilli on examination. At 4 P.M. Mr. Moore excised the whole of the pustule, together with the marginal tissues, by a circular incision. The surface of the wound was extremely hard and indurated, and bled freely. The wound was dressed with a paste composed of ipecacuanha and water and double cyanide gauze. A powder containing five grains of ipecacuanha with

[1] THE LANCET, Oct. 17th, 1891.
[2] THE LANCET, Feb. 11th, 1888.
[3] See Experiments by Mr. Evans, Guy's Hospital Reports, vol. xlvii.

one-sixth of a grain of morphine was ordered to be taken every four hours.

July 31st.—The patient slept at intervals during the night; he was sick twice after the first powder, but on repetition of the dose he retained it. The dressings were very adherent to the wound. The ipecacuanha paste was re-applied. There was total absence of pain or tenderness on dressing. The face was not so swollen, the pulse was 100, and the temperature 100° F.

Aug. 1st.—He slept well. There was no sickness after the powders. The swelling of the face was considerably diminished; he can open both eyes. The pulse was 86 and the temperature was 98°.

3rd.—The swelling has entirely disappeared. The powders were ordered to be taken every six hours.

4th.—The ipecacuanha was discontinued, both internally and externally.

The patient was discharged on Aug. 27th, twenty-eight days after admission, the wound having cicatrised; he was feeling perfectly well.

Report on a Section of the Specimen by the Pathologist to the Guy's Hospital Gazette.—The specimen is one of malignant pustule, removed in an early stage of the disease. The affected area of skin is densely infiltrated with leucocytes, which have infiltrated and destroyed the follicles &c.; the epithelium has undergone coagulation necrosis, and the layers have been partly separated by masses of leucocytes. Towards the base of the inflamed area the process of absorption of striated muscle by leucocytes is well shown. There is no pus. Evidencing the intensity of the irritant are small ecchymoses among the leucocytes. Anthrax bacilli are moderately abundant in the inflammatory exudation.

Remarks by Mr. DAVIES.—The points of interest in the case are: (1) the probability that the patient at the time of the accident sustained a slight abrasion of the forehead, and that he became infected from his brother; (2) the attack of syncope not resulting from pain, whilst the patient was being examined; and (3) the entire absence of pain, tenderness, and suppuration.

Medical Societies.

PATHOLOGICAL SOCIETY OF LONDON.

Encysted Hydrocele of Round Ligament.—Cyst of Canal of Nuck.—The Local Lesion of Scarlet Fever.—Streptococcus Pneumoniæ from a case of Cerebro-spinal Meningitis.—Severe Fever accompanied with Red Patches over Knees and Elbows.

AN ordinary meeting of this Society was held on Nov. 21st, Dr. PAVY, President, being in the chair. The President referred in feeling terms to the death of Sir Andrew Clark, and a vote of sympathy with his family was passed.

Mr. H. H. CLUTTON showed a specimen of Encysted Hydrocele of the Round Ligament, which he had removed from a woman aged thirty-nine, who at the age of eighteen had what she called a hernia and had worn a truss. Seven days before her admission to St. Thomas's Hospital the swelling had become irreducible, but without the ordinary symptoms of strangulation. At the operation the sac was opened and found to be completely shut off from the peritoneal cavity. The cyst was removed and found to possess a thick ridge at the back which was considered to represent the round ligament. The patient made an uninterrupted recovery.—Mr. LOCKWOOD wished to know whether the wearing of the truss had produced occlusion of the communication with the abdominal cavity. He had recently operated on a case of congenital hernia and opened two accessory sacs which had been produced by an ill-fitting truss.—Mr. CLUTTON, in reply, said that there was no evidence to show that a hernia had ever existed, and he could not say whether the communication with the peritoneum had been closed by the pressure of the truss or by a natural process.

Mr. W. L. WAINWRIGHT showed a Cyst of the Canal of Nuck which was removed from an out-patient at the Shadwell Hospital aged sixteen. It was situated in the anterior part of the right labium majus just below the external inguinal ring; it projected from the general surface like a nævus, stretching the skin over it, and was scarcely movable in the surrounding tissues. On removal it measured 3½ by 2cc. and was very tense and translucent. At the upper part there was a constricting band of fibrous tissue which gave the cyst an hour-glass shape when fresh. The mother said it had been present for years, but lately had become much more prominent.

Dr. W. DOWSON read a paper on the Local Lesion of Scarlet Fever. He pointed out that this disease was endemic in certain areas of population and that, notwithstanding this, a very large proportion of the population escaped altogether, the natural incidence of the disease being well under 5 per cent. Scarlet fever all but disappeared after the age of sixteen, and he had sought for a reason for this immunity. He believed that the primary local lesion in this affection was in the tonsils, there being at first a local disease of the tonsils and of the cervical lymphatic glands, and subsequently a general development of symptoms from absorption of local toxines. The destructive inflammation of the tonsils was always present in greater or less degree, and it was one of the very earliest signs to appear. An examination of the throats of 500 persons had convinced him that the tonsils were permanently damaged by scarlet fever. The onset and establishment of puberty seemed to have an influence in diminishing the liability to contract the disease. He quoted a case in which he thought that the primary lesion was engrafted on to old ear disease, and he remarked that the tonsils were often unequally involved. Some cases which occurred during an epidemic presented only signs of sore-throat and fever; these he regarded as mild local attacks of the disease. When relapses occurred they were accompanied by a fresh outbreak of sore-throat. Where the primary infection occurred in a wound the throat was not usually affected. The tissues of the primary lesion might differ in their essential characters and in their hereditary qualities, and hence it was that surgical and puerperal scarlet fever were different to the ordinary affection. Where scarlet fever occurred in association with a wound, but the latter had not been the primary source of infection, there would usually be a sore-throat accompanied by a healthy condition of the wound. In puerperal scarlet fever also the sore-throat was but little marked. He suggested that acquired immunity was really a local immunity, the changes in the tonsil induced by the primary attack being of a fibrous nature and protecting it from further lesions. His conclusions were that the sore-throat was almost invariably present and was one of the first symptoms; that it recurred in relapses; that its severity was so proportionate to the symptoms that it had been used as a basis of classification of the disease; that it was absent when local infection took place in some abnormal part; that it left a permanent lesion and that at puberty and over thirty years of age the natural processes of development of the tonsil tended to limit the chance of acquiring the disease. He held that the sore-throat and cervical lymphadenitis of scarlet fever were analogous to the chancre and bubo of syphilis and to the intestinal ulcer and enlarged glands of typhoid fever.—Dr. CAYLEY thought that there was very strong evidence to show that the poison was not confined to the fauces, and the fact that the patient remained contagious for six or eight weeks, long after the throat symptoms were well, was against the theory. There was no doubt that the poison was contained in the skin, and he had seen many cases in which the disease had been acquired in the ordinary way, where no sore-throat was observable. The mild cases of scarlet fever, with very slight involvement of the throat, were just as protective as were the graver attacks where the tonsils had presumably been severely damaged.—Dr. GOODALL confirmed Dr. Cayley's observation that in many cases the throat symptoms were either very slight or were absent. It was remarkable that many mild cases of scarlet fever had afterwards severe nephritis or marked desquamation.—Mr. SHATTOCK observed that younger animals were more susceptible than were older ones to all forms of microbic infection, and he quoted the well-known example of the adult white rat not being susceptible to the poison of anthrax, whereas the young of the same animal was easily affected.—Dr. DOWSON, in reply, said that very young infants were exempt from tonsillar lesion in scarlet fever, and this was perhaps because, as they still suckled, their tonsils were not liable to be wounded by small, sharp particles of food. He said that the throat lesion often persisted for weeks after the initiation of the fever.

Dr. KANTHACK read a communication on the Streptococcus Pneumoniæ in Cerebro-spinal Meningitis. A case of this disease had recently occurred in St. Bartholomew's Hospital uncomplicated by pneumonia or other lesion. At

the post-mortem examination the surface of the brain was found to be covered with pus, and pus was also found on the spinal pia mater. On staining, typical capsule cocci were found to be arranged in pairs or short chains of from four to six individuals. Some of the leucocytes apparently contained one or more pairs, and the number of plasma cells was greatly increased. Cultivations were made of the pus on glycerine and ordinary agar, and dewdrop-like cultures were obtained after twenty-four hours. Inoculations of these cultures into mice killed them rapidly; but from the heart's blood of these mice the cultures made grew more rapidly, assumed true streptococcus form, and lost their virulence towards mice and rabbits. The pneumococcus was extremely variable; over thirty varieties had already been described, and the one which Dr. Kanthack showed approached the streptococcus pyogenes in its characters. He was now endeavouring to re-establish the virulence of his cultures, and he hoped thereby to bring them back to their original type.

Dr. GASTER mentioned a case of a man who was seized with Severe Fever and developed Red Patches over his Knees and Elbows. At the necropsy meningo-encephalitis was found, and from the pus streptococcus pyogenes albus and aureus were isolated. Of the sixteen cases of pneumonia he had recently helped to investigate, three had meningitis, with high temperature and delirium. The meningitis was not purulent, but there was a yellowish, serous fluid between the convolutions, and from this was obtained a pure culture of the diplococcus pneumoniæ.

The following card specimens were shown:—

Dr. ROLLESTON: Vermiform Appendix, with Pouches due to recent Ulceration.

Mr. CLUTTON: Epithelioma of Scar Tissue and Tibia.

HUNTERIAN SOCIETY.

AN ordinary meeting of the Hunterian Society was held at the London Institution on Wednesday, Oct. 25th, Mr. F. GORDON BROWN, President, in the chair. Dr. ARTHUR DAVIES read a paper on "The Thyroid Gland and its Therapeutic Value in Myxœdema and certain Skin Affections." He first briefly discussed the different theories as to the function of the thyroid gland and showed that from experimental and clinical evidence the most important of these was that which connected the function of the gland with the metabolism of the body. The results of transplantation of the thyroid gland by Professors Kocher and Van Esselberg and the able experimental investigations of Professor Victor Horsley were alluded to. He then described the great therapeutic advance made by Dr. George Murray, who most successfully carried out the injection of the thyroid juice in a case of myxœdema. The disadvantages were also dwelt on—namely, (1) loss of consciousness; (2) tendency to syncope; (3) acceleration of the pulse-rate; (4) abscesses and indurations; (5) nausea; (6) flushings; (7) tonic spasms; and (8) stabbing pains in the lumbar region. Dr. Davies showed a man who had suffered from myxœdema for fifteen years, and who had been successfully treated by the thyroid injections. He then referred to the remarkable discovery made independently by Dr. Hector Mackenzie and Dr. E. L. Fox as to the efficacy of the thyroid gland when given raw or in the form of a glycerine extract by the mouth. He also gave an account of a further modification of this method—namely, the administration of a dried extract from the gland—and showed a series of five cases successfully treated by this means. The rapid loss of weight during treatment was dwelt on, and the importance of keeping a weekly record of this, so as to control the activity of the thyroid principle. Casts of hands were shown illustrating the marked diminution in volume after treatment. It was also shown how important it is to maintain the treatment for the rest of life. The great value of the thyroid gland treatment in sporadic cretinism was also pointed out, and the rapid growth noted in such cases. Lastly, Dr. Davies showed a series of photographs lent to him by Dr. Byrom Bramwell, illustrating the marked improvement in psoriasis after thyroid feeding, which he had also observed in two cases of psoriasis, one of chronic eczema, and one of xeroderma with ichthyosis.—Drs HECTOR MACKENZIE, FLETCHER BEACH, PASTEUR and others discussed the paper and related cases.——An ordinary meeting was held at the London Institution on Wednesday, Nov. 8th, Mr. F. GORDON BROWN, President, in the chair.—Dr. CHAPLIN showed a case of Congenital Malformation of the Heart in a boy aged ten, who suffered from cyanosis, clubbed fingers, &c.—The PRESIDENT showed a man who in August last had an attack of Insolation, followed by delusions, increased knee-jerks, melancholia, and, lastly, universal steadily increasing tremor and general weakness.—Sir HUGH BEEVOR showed a woman aged twenty with a loud Systolic Pulmonary Murmur with no cyanosis, and another woman aged forty-two with a remarkably loud Musical Systolic Aortic Murmur.—Dr. F. J. SMITH showed two cases of Hemiplegia, dating from infancy, one, aged twenty-eight, now presenting well-marked right-sided athetosis; the other, aged forty-two, presenting complete flaccidity with marked wasting of the limbs on the left side.—Mr. OPENSHAW showed a Nævus of the Tongue as large as a Tangerine orange, which had been considered to be sarcomatous.

PROVINCIAL MEDICAL SOCIETIES.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.—At a meeting of this Society on Nov. 9th, at which the President, Dr. J. ADAMSON, occupied the chair, several patients were brought forward.—Mr. WARDLE introduced a man on whom he had performed Enterostomy without Plates. For about two years there had been attacks of obstruction due to cicatricial contraction following ulceration. It was now four months since the operation. All symptoms had disappeared and the man was in good health.—The PRESIDENT showed a child with Epispadias and Double Hernia. Different methods of treatment were discussed.—Dr. GOWANS presented a lad from whose knee he had removed a Loose Cartilage. After its removal the knee still locked and the incision was therefore extended, and an excavation was found in the lower end of the femur. The loose cartilage fitted into this excavation exactly. No history could be obtained of previous injury to the joint. The movements of the limb were perfect.—Mr. PAGE brought forward the following specimens:—1. A man whose Penis, Testes, Scrotum, and Inguinal Glands had been removed for Extensive Malignant Disease. 2. A girl, the Right Half of whose Thyroid Gland he had removed nineteen days before. Both lobes were very large and caused much inconvenience; the left lobe had markedly diminished in size since the operation. 3. A patient on whom he had performed Halsted's Operation for a Large Scrotal Hernia.—Mr. RUTHERFORD MORISON showed:—1. Two cases, fourteen months after operation, in which there was no trace of recurrence of the affection in question. The first patient was an old man, the whole of whose Lower Lip had been removed for Epithelioma; the second, a girl, Half of whose Thyroid Gland had been removed for a Round-celled Sarcoma. 2 A woman with Syphilitic Ulcer of the Face simulating Rodent Ulcer. 3. Tongue with Leucoplakia and commencing Epithelioma.—Mr. BLACK showed a child aged eight years, whose Hip he had excised by Ollier's method.—Dr. HUME showed:—1. A case of trephining for Mastoid Disease. The patient had suffered from suppurative ear disease for a long period; when first seen he had symptoms of pyæmia, and the diagnosis of septic thrombosis of the lateral sinus was made. The mastoid antrum was opened, and it and the tympanum were made aseptic. On trephining it was found that the lateral sinus was patent, and no abscess could be discovered in the main substance. After the operation there was a rigor, and an abscess was found forming below the mastoid—probably an extension from the mastoid cells. This was opened and the patient made an uninterrupted recovery. 2 A man whose Internal Semilunar Cartilage had been removed. The patient received a severe blow on the inner side of the knee, which immediately afterwards became useless, and a projection could be felt at its inner side. At the operation it was found that the anterior half was separated and bulged between the articular surfaces. The whole of the cartilage was removed and the movements of the joint were now perfect.—Mr. VICKERY showed a case of Lateral Sinus Thrombosis cured by ligature of the internal jugular. There was a history of chronic ear disease. When first seen there were severe right earache, high temperature, and puffiness in the right parotid region; later there were rigors and vomiting. The internal jugular was tied as low down as possible, and immediately collapsed above the ligature. On trephining

and opening the lateral sinus there was a free rush of blood, which was stopped by pressure. Rigors and high temperature occurred for a few days, but the patient then rapidly recovered.—Dr. OLIVER showed a boy with Friedreich's Disease, and Dr. LIMONT a woman with Molluscum Contagiosum, a man with Psoriasis treated for a month with thyroid powder with little effect, and a boy with Psoriasis Rupioides, the crusts being studded with hæmorrhagic spots.—Other specimens were shown by Dr. MURPHY—viz., seven Extra-Uterine Gestations, all recovering after operation; Ruptured Appendix with Foreign Body; and Fibroid with Twisted Pedicle removed by abdominal hysterectomy.—Finally, Mr. PAGE showed two cases of Tubal Gestation; an Oxalate of Lime Calculus removed by a supra-pubic operation; an Ovarian Tumour and Sarcomatous Kidney removed at one operation; and a Dermoid Cyst of Ovary.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—Dr. W. HUNTER, President, occupied the chair at the meeting of this Society held on the 15th inst., when Dr. HANDFORD read a paper on the Gallop Rhythm in Cardiac Disease. Having defined the scope of the subject as including those cases in which three distinct heart sounds could be heard instead of two, he proceeded to discuss the causation of reduplicated first or second sound. He gave reasons for doubting the adequacy of accepted explanations of this phenomenon. When the extra sound was pericardial its significance was thought to be practically *nil*. A doubled second sound was important as a help to diagnosis of mitral obstruction. An interpolated first sound might be of great prognostic import, especially when all three sounds were equidistant in time and of equal intensity.—The PRESIDENT and Dr. W. B. RANSOM discussed the subject, and, Dr. HANDFORD having replied, Dr. ELDER showed a woman aged thirty-five years upon whom he had successfully operated for Left-sided Pyosalpinx. The sac was opened and drained, and purulent fluid amounting to fifteen ounces evacuated, but the sac could not be removed on account of adhesions. The patient had recently had an attack of typhoid fever and, presumably, perforation of intestine.—Dr. ELDER then showed an Ovarian Tumour weighing eight pounds, and Dr. MICHIE brought forward the following specimens: (1) an Ovarian Cyst with Twisted Pedicle, one and a half turns (from left to right), producing strangulation, successfully removed from a patient six days after the onset of acute symptoms; (2) Parovarian Cyst with Twisted Pedicle, two turns (from left to right), not producing strangulation; (3) two Dermoid Ovarian Cysts removed from the same patient; (4) Tubal Gestation removed six weeks after cessation of menstruation; (5) Double Pyosalpinx removed from a patient with acute peritonitis produced by rupture of one of the tubes; and (6) the Appendages removed for Myoma. Both the tubes and ovaries were affected with chronic inflammation and were densely adherent to the tumour. The last five specimens were removed during the last five days. All the patients were progressing satisfactorily.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—Mr. R. FAVELL presided at a meeting of this Society on Nov. 9th, when Sir J. Crichton-Browne was unanimously elected an honorary member. Mr. DALE JAMES showed: (1) a boy aged ten years suffering from severe Kerion, with two patches of keloid on the site of the scar of a burn; (2) a baby ten days old with a large fluctuating Cervical Cyst, from which aspiration with a fine needle procured arterial blood; and (3) a baby a week old showing Deformity of both Knees, apparently produced by partial dislocation of the head of the tibia forwards.—Mr. PYE-SMITH showed a girl aged eleven years who had been caught by a button-hook in the right eye ten months ago. There was hæmorrhage, followed immediately by an impairment of sight in certain directions. There was a scar at the insertion of the inferior rectus and the eye could not be turned fully downwards. Diplopia was elicited on looking downwards. The paresis of the inferior rectus appeared to depend on the muscle having been torn at its insertion.—Mr. PYE-SMITH also showed a case of Ophthalmoplegia Externa affecting the Right Eye of a married woman aged thirty years. Ptosis commenced five months before, and when first seen, a fortnight later, there was paralysis of all the orbital muscles. The pupil was contracted but not quite inactive. After a month's treatment with mercury and iodides the ptosis partly disappeared and the external rectus recovered.—Dr. SWEETEN showed for Dr. CLAPHAM a Brain with a Patch of Softening in the Left Parietal Cortex and a recent Embolus in a Cortical Branch of the Right Middle Cerebral Artery, Recent and Loose Vegetations on the Aortic Valves, Small Kidneys with Adherent Capsules and Wasted Cortex, the result of chronic lead-poisoning, Carcinoma of Stomach with Secondary Deposits in the Liver, all being from the same patient.—Dr. KNOX showed Ruptured Liver and Kidney caused by a fall from a scaffold.—Mr. CROSS showed the Bowel from a case of Typhoid Fever with severe hæmorrhage. The ulcers were most numerous in the ascending colon.—Dr. ARTHUR HALL showed some Brain Diagrams on slates and a microscopic specimen of Kidney disintegrated by hydrochloric acid.—Mr. DALE JAMES showed the drawing of an Eruption occurring after Vaccination in a previously healthy child. Three weeks after vaccination from the calf a few sharply acuminated papules appeared on the vaccinated arm and on the face, and were followed by others during the next six months. The crown of the papules was carious; in about three days they developed into oval, tough, semi-translucent vesicles, exactly like the pupæ of ants; these existed for a week, eventually shrivelling up into filiform warty patches, which fell away in about a week and left dry, rough, reddish areas much more extensive than the original ones.—Mr. SIMEON SNELL then read a paper entitled "Doctors as Men of Letters." Many medical worthies were dealt with in detail and extracts were given from their literary productions. Mr. Snell thought that people were little aware of the large part medical men had taken in the literature of their country. Many of the most distinguished in all branches of literature were either medical men or had received a medical education. The lecturer dealt fully with different writers in different periods, mentioning their works and many interesting incidents relating to the times in which they lived. The paper concluded by alluding to our English-speaking brethren on the other side of the Atlantic, and especially to the works of Dr. Oliver Wendell Holmes, a veteran who had in the last summer passed his eighty-fourth birthday.

Reviews and Notices of Books.

Voice-training Primer. By Mrs. EMILE BEHNKE and C. W. PEARCE, Mus. Doc. Cantab. London: Chappell and Co. 1893. Pp. 76.

MRS. BEHNKE is well known as a most excellent teacher of singing upon thoroughly philosophical principles, whilst Dr. Pearce holds a distinguished position as a professor of music. The little book they have published, though written in the somewhat unengaging style of questions and answers, is quite a model of compression and gives a great deal of information even to those who may be proficients in reading and rendering music. Everyone who loves the concord of sweet sounds should read it through. Beginning with a short anatomical and physiological description of the organ of voice and the general mechanism of respiration, the mode of exercising the voice to the best advantage is given. This is followed by a catechism of musical theory, which Dr. Pearce, from whose pen it proceeds, hopes will furnish vocal candidates at examinations with all the theoretical answers to the questions likely to be asked. This part gives an account of the pitch of sounds, the tonal relationship of sounds, including an account of major and minor scales and their key signatures, diatonic and chromatic intervals, and chromatic scales. A chapter is devoted to "time" and one to the movements of the instrument that marks it—the conductor's "bâton." It is a very useful and well-arranged book, which those of our profession who have little time to study larger treatises may read with advantage.

JOURNALS AND REVIEWS.

The Veterinary Journal for the months of June, July and August contains a most interesting and important paper by Professor Thomassen, of the Utrecht Veterinary School, entitled "A Contribution to the Study of Disease of the Nervous System" (in animals, of course), in which the more notable and serious of these disturbances are dealt with in a

thoroughly scientific manner, especially cerebro-spinal meningitis. The illustrative cases given are particularly interesting to the pathologist, and show what an advance has been made in the study of these disorders. In the number for July, Dr. Goss of Marietta, Georgia, U.S.A., publishes an article in favour of the tincture of echinacea angustifolia, made from the root of that plant, which grows in Alabama, as a preventive of hydrophobia. It appears to be also successfully employed as an accessory agent in the treatment of syphilis, cholera infantum, and diphtheria, as well as in ulcerations generally; it is applied locally and administered internally. It is also stated to be a remedy for rhux poisoning and for healing pus cavities or abscesses in any part. The same number has an instructive paper on infectious abortion in mares. In the number for August the chief contribution is a lengthy article on anæsthetics in veterinary surgery, which is well worth perusal on account of the light it throws on the action of chloroform and ether on various domestic animals. It would appear that a fatal result from the employment of anæsthetics is very rare in these creatures. In the September issue the chief papers are one on protective inoculation for what is technically known as "symptomatic anthrax," and one on skin grafting in animals by Thiersch's method; whilst that for October has a communication from Professor Cadiot, of the Alfort Veterinary School, on tuberculosis of the bronchi, trachea and larynx in the dog, and a very exhaustive inquiry into an outbreak of rabbit septicæmia, its nature and the specific organism which gives rise to it.

The Veterinarian for September and October has as its chief features some records of cases and references to anthrax. Reports of meetings of veterinary societies and notices of the more prevalent contagious diseases among the domestic animals included in the Contagious Diseases (Animals) Act are also published.

In the September issue of the *Journal of Comparative Pathology and Therapeutics* there is a varied collection of articles of more or less interest, among which may be enumerated Some Joint Diseases of the Horse, Equine Sarcoptic Scabies, and Hæmoglobinuria of the Horse, with a number of clinical articles on diseases and accidents among horses, cattle, and dogs. An editorial article on Tuberculosis draws attention to the statement published by Professor Jansen of the Tokio Veterinary School, Japan, that while this disease is very prevalent among the human population—more so than in Germany—the Japanese cattle are completely free from it, for neither in the slaughter-houses at Yokohama and Tokio nor in any other locality has the slightest trace of tuberculosis yet been found among cattle of the pure Japanese breed. This statement is accepted as a positive proof that tuberculosis may be extremely prevalent in man even where the source of infection which some have thought to be the most important is only imaginary; but it is also admitted that this does not prove that infection from cattle to man is not of frequent occurrence in this country, though it is considered to be an element of proof in that direction. It is added that every other consideration points in the same direction, and goes to show that, while there may be occasional cases of infection of human beings from cattle, and *vice versâ*, still in the two species the disease is practically independent—cattle being infected from cattle and human beings from human beings. Professor Jansen remarks that since Japan began to admit foreign cattle, chiefly from America, partly for milk production and partly to improve the native breed, tuberculosis has been often met with, and that facts disclosed in the slaughter-houses and observations made at the Veterinary School show that, with few exceptions, the animals imported from the United States, as well as their progeny, are more or less tuberculous, and that of the cross-breeds 50 per cent. are already affected with tuberculosis.

Archives de Physiologie. No. 4. October, 1893. Paris: Masson.—This part of the above work contains a large number of articles—no less than twenty-six—the more important of which are the Pathological Physiology of Nervous Shock, by M. H. Roger, a *résumé* of which we published in our issue of Nov. 11th; Researches on the Respiration of the Cetacea, by M. F. Jolyet; Researches upon the Localisation of Tactile Sensations, by M. Victor Henri, with two plates; Experiments upon the Digestive Power of the Pancreas in the Fasting State in Normal Animals and in those deprived of their Spleen, by MM. Carvallo and Pachon; on the Quantity of Fibrin in the Blood before and after it has passed through the Lungs, by A. Dastre; on the Genesis of Subpleural Ecchymoses, by Gabriel Corin; on the Albuminoids of Milk, by Maurice Arthus; on the Contractility of the Biliary Ducts, by M. Doyon; on the Effects of Total Ablation of the Occipital Lobes on Vision in the Dog, by M. Alexandre N. Vitzou; Some Novel Facts in regard to the Excitation and Inhibition of Nerves, by Augustin Charpentier; on the Functions of the Adrenals, by J. E. Abelous; on Passive Dilatation of Vessels, by Ch.-A. François Franck; on the Importance of the Internal Secretion of the Kidneys, by Dr. Brown Séquard.

The Birmingham Medical Review of November contains an excellent essay on Pelvic Abscess by Dr. C. J. Cullingworth. This article formed Dr. Cullingworth's address at the opening meeting of the Midland Medical Society on Nov. 2nd, and it was reported in THE LANCET of Nov. 4th. Dr. Simon contributes a paper on Peritonitis, wherein he refers to the difficulty of diagnosis where none of the circumstances favouring the condition happen to be present, and points out that it is precisely in those cases that a correct diagnosis would often result in the saving of life. The account by Mr. Barling of nine cases of Suppurative Peritonitis, upon eight of which he operated, should be read in connexion with Dr. Simon's paper, as the results of the cases, on the whole, confirm the correctness of Dr. Simon's favourable expressions about operative interference. In eight of the nine cases diagnosed as suppurative peritonitis the abdomen was incised or drained. Of these cases, five patients recovered and two died, while a third is reported, under date Sept. 8th, to be going down hill. The fatal issue on each occasion took place in a case of very advanced and disseminated disease.

The Practitioner. Vol. LI., No. 5. November, 1893. Macmillan and Co.—This number contains an instalment of a paper by Dr. Alexander Morison entitled the "Hæmo-Muscular and Hæmic Factors in Disease of the Heart"—a subject of great practical importance, which is treated by the writer in a thoroughly scientific and philosophical manner. There is no doubt that more gain in rational treatment is to be derived from a closer study of the cardiac muscle than in the valvular defects upon the precise recognition of which so much attention is bestowed, and Dr. Morison's essay should serve to stimulate thought and inquiry in the former direction. Dr. Weir Mitchell's recent address to the New York Academy of Medicine upon Precision in the Treatment of Chronic Disease is reproduced; it is an able and practical exposition of the "rest-treatment" which he introduced with such striking results. A brief note on the treatment of measles by eucalyptus inunction is contributed by Dr. Shelly, who, in conjunction with Mr. H. Savory, tried this method at Haileybury College with results which "did not encourage us to extend its application." Mr. A. Greenwood describes Bad Bertrich, between Coblenz and Treves, the waters of which are similar to, but less concentrated than, those of Carlsbad.

The American Journal of the Medical Sciences. Vol. CVI., No. 5. November, 1893. Philadelphia: Lea, Bros. and Co.—The most important articles in this number are two which deal with diphtheria, by Dr. Francis H. Williams and Dr.

Councilman, the former dealing with the subject clinically, the latter writing on the pathology and diagnosis. These papers are fully dealt with in another column Dr. William Osler has an interesting paper on Sporadic Cretinism in America; and Dr. Banister points out defects in the prevailing system of rifle practice which conduce to eye-strain, and he suggests that targets should be black and the bull's-eye and rings buff, and that when the recumbent position is necessary it should be the prone position and never the back and side position that is assumed by the marksman.

International Medical Magazine. Vol. II., No. 9. October, 1893. Philadelphia: J. B. Lippincott Co.—One feature of this periodical is the space devoted to clinical lectures, of which the present number contains three, all being of practical value and interest. They are on Syphilitic Hemiplegia, by Dr. Gowers of London; on the Diagnosis and Treatment of Gastric Ulcer, by Professor Potain of Paris; and on a case of Obscure Brain Lesion, by Dr. Brewer of Chicago. The original communications have the merit of not being lengthy or diffuse. Dr. Lockhart Gillespie of Edinburgh describes some simple methods for the analysis of the gastric contents, and Professor Bondard of Paris writes on Albuminuria not of Renal Origin. A mild epidemic of diphtheria which occurred in Hightstown, New Jersey, last July, is related by Dr. Franklin of that place. There were about forty cases, with eleven deaths, and all were supplied with milk from one source, although the cases occurred in various parts of the town. In one family the parents drank the infected milk and had the disease, while the children drank other milk and escaped. There are several other papers dealing with such subjects as jaundice, pleurisy, enteritis, &c.

New Inventions.

LIEDBECK'S VIBRATOR.

VIBRATION is regarded by many as of great importance in passive movements, and in Ling's system of Swedish movement treatment it is systematically employed in combination with active and various forms of passive exercise. It is averred that the vaso-motor nerves are thereby stimulated, and, as a consequence, there is a diminished blood-supply in the part operated on, with resulting increased absorption of the products of tissue change. The vibration also stimulates muscular action, and by its effect on the sensory nerves pain is relieved. Vibrations have been performed by the hands, but this is very exhausting to the operator, and, morever, the regularity and rapidity of the movements are defective, and to meet these requirements vibration machines have been constructed; but these, as a rule, have been unsatisfactory owing to their bulk and the necessity of considerable motive power. Liedbeck of Stockholm, however, has invented an ingenious, neat, and portable machine which is capable of satisfactorily performing these fine percussion movements. It consists of a driving mechanism with large and small cogwheels inside a case with a winch handle. Attached to the small wheel is a flexible spiral shaft of steel, which screws by the other end to the vibrator proper, within which there is a very clever mechanism for causing the to-and-fro movement. To this can be fixed "contacts" of various shapes, according to the part of the body to be acted upon. When the driving handle is turned at a uniform rate of from 100 to 120 revolutions per minute vibrations of about 1500 per minute result, which may be very delicate, as when applied in neuralgia with a fine rubber contact, or more forcible, as with a disc over the region of the colon in constipation. The whole apparatus is contained in a neat oblong box, measuring only eight inches and a half in its long diameter; it is accompanied by a profusely illustrated handbook showing its application to the various parts of the body. The machine is made in Stockholm, but can be supplied by the agent in London, Mr. F. J. Tiffin, 3, Great Winchester-street, E.C.

THE UNEMPLOYED.

A VOLUMINOUS report upon the agencies and methods for dealing with the unemployed has just been issued from the Board of Trade[1] and in view of the existing condition of our own industrial community is most timely and interesting in a special degree. But although a large amount of information is here collected it can hardly be said that the perusal of these pages does much to lighten the burdensome sense of being face to face with an insoluble problem to which those who have given attention to the relief of the necessitous poor have grown only too well accustomed. This is, of course, no more than a necessity of the case. In the ranks of those who at any time are out of work there must appear a large proportion of men who are morally and physically unfit for work. Their unfitness may be imputed to them as a vice or it may be diagnosed as a disease; but, however accounted for, it must be recognised as a fact and a fact of capital importance in dealing with the indigent classes. Charity, to be efficient, must be discriminating. The history of medical charity affords a striking illustration of this principle. The need of supervision to exclude from the benefit of hospital relief those who are not fit objects of hospital charity is now universally recognised and on all hands accepted without challenge as sound doctrine. The difficulty of discriminating successfully is great, even extreme; however, a beginning has been made, and time will no doubt perfect the methods in use for this purpose But when it is a question of providing relief work the difficulty of discrimination is greatly enhanced, and it can hardly be said that here even a beginning has been made. For one thing, the organisation which administers relief in this form is usually itself the creature of the hour and can hardly be expected to be equipped for dealing with more than the most manifest and pressing necessities. There are in the report under remark notices of permanent organisations which deal with the labourer out of work; but, being permanent, they naturally and necessarily adjust their operations to the ordinary case of necessity arising in individuals at times when the community as a whole is in the enjoyment of its normal state of prosperity; and, although the Charity Organisation Society, for example, has given much attention to the case of extraordinary and widespread distress, yet when the calamity actually occurs its function is mainly and of necessity advisory. The work must actually be done and the scheme approved by persons to whom the problem is more or less a new one. Considerations of a very similar kind apply in the case of boards of guardians, upon whom indeed a season of widespread distress casts a heavy burden of responsibility. Of this burden they must, and do, discharge themselves in one way or another, but as a rule without any but the roughest tests applied to determine the fitness of applicants for work to receive relief in this form. Recently the Local Government Board has sought to interest vestry and municipal authorities in the task and has suggested the employment of men upon public works in seasons of distress. It is, however, obvious that this is much more easily said than done. The conditions of season and weather which give rise to shortness of work in the ordinary channels of employment embarrass public undertakings in the same way, and it is more than probable that no charity would be so inefficient as that which the local authorities might be stirred up to administer by the monitions of a central office, whose proper function is to criticise and exercise a restraining influence upon local extravagance. Upon the whole, it is impossible to close this volume without feeling that there is yet much need of painstaking discussion of the best way of solving so much of the problem of want of work as admits of solution; but, at the same time, it is impossible to peruse it without being impressed with the value of the facts here collected as raw material of such discussion.

[1] Board of Trade Labour Department. Published by Eyre & Spottiswoode. Price 1s. 9d.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 25, 1893.

ON Tuesday next, at 2 P.M., the General Medical Council will commence its fifty-sixth sessional meeting, and, if we may judge from the many public questions which have been referred to it, or in connexion with which it has been mentioned, we may anticipate a somewhat important meeting. The *personnel* of the Council is likely to be little changed. The retirement of Professor LEISHMAN has necessitated the appointment of a successor. He was a forcible and clear-headed man, who well held his own in the proceedings of the Council, and he will be much missed. It is satisfactory, however, to know that he has been replaced by Professor GAIRDNER, who represents all that is best in Scottish teaching and whose earnestness as a medical teacher and authority as a learned and practical physician make his entrance into the Council a matter for congratulation. The duty of the General Medical Council is roughly divided into two parts: firstly, that which has reference to medical education; and, secondly, that which has reference to the Medical Register. It is an important duty of the Council to see that its Register is as accurate as it can be made; and, if we may judge from the great rarity of complaints, this duty is, on the whole, performed conscientiously. But a more difficult and delicate duty is imposed on the Council—viz., that of purging the Register, if it sees fit, of the names of those who have been removed from the lists of their respective Colleges, or of those convicted of felony or misdemeanour, or of those who have been judged by the Council itself "to have been guilty of infamous conduct in a professional respect." Theoretically, the meeting in November is supposed to be concerned chiefly with questions affecting the purity of the Register. The Council, in other words, is expected to exercise its disciplinary powers. It will be impossible, before the programme appears, to know in how many cases the Council is likely to be invoked for the exercise of these powers; but, if we may judge from the newspapers, it will have plenty to do. Recent months have been very fruitful in cases in which the honour of the medical profession seemed to be involved. In one remarkable case it will be remembered that the Judge said that he did not himself propose to say anything about the facts disclosed as to the morality or immorality of what took place. *That was a matter for the Medical Council to consider.* It remains to be seen in what form the Council will respond to this remark of Lord Justice LINDLEY. Various other questions of "covering" in one form or another are likely to arise in the course of the proceedings. It is only fair to say that the Council has cases referred to it constantly with which it has no power to deal. We lately noticed in the papers a sad case in which a druggist continued to prescribe for a patient suffering from typhoid fever until the latter died from perforation, and the case was referred to the Council; but, as the Medical Acts stand at present, the General Medical Council has no power in such a case. Druggists are not subject to its authority. The case is a sad one, and in most other countries it would have excited just indignation and have led to punishment; but in this free country we take such practice more "philosophically."

The Public Prosecutor's office would seem to be a sinecure as regards the immense frauds which are practised with impunity in the form of false medical practice. Another question of great public moment and of professional interest, which we think can hardly be ignored by the General Medical Council, is the new device for granting M.D.'s by limited companies. Here is a source of easy titles and of profits which, if not dealt with seriously, may assume very large proportions. We are almost alone in having directed public attention to the registration at Somerset House, with all the formalities of law, of the General Council of *Safe* Medicine. The objects of this company are to grant degrees, scholarships, and awards of merit in "the magnetic and botanic system of safe medicine," and its highest diploma is announced to confer the distinction of M.D. (Bc). It may be natural to laugh at a dozen herbalists creating themselves into a degree-granting body, but the state of the law which empowers any handful of men to set up a limited company with such powers cannot be regarded with indifference. We are glad to see that the University of London is moving in the matter, but it is surely the duty of the General Medical Council, as administering the Medical Act, which was passed to enable the public to discern qualified from unqualified practice, to take notice of such an audacious new departure in the manufacture of bogus degrees. The Council has been slow and reluctant to use its powers, which, though restricted, are yet considerable. It can scarcely hope to have them enlarged if it does not use those which it already possesses. One report of interest will be looked for at the approaching meeting—viz., that of a small standing committee chosen from the Executive Committee appointed last session on the motion of Sir WALTER FOSTER to advise the Council on all questions of action to be taken under Sections xxviii and xxix of the Medical Act, and in all questions of principle or practice in the disciplinary functions of the Council. It may be hoped that this report will give system and method to the proceedings of the Council in the use of its disciplinary functions and will tend to enlarge the somewhat narrow views which have hitherto prevailed among its members.

But, though registration questions and questions of discipline have been considered to demand the chief attention of the Council in November, it has never been found practicable to restrict it to such subjects; and we imagine that on this occasion various questions of educational importance will arise. They will do so partly, and chiefly, in connexion with the reports of the Inspector and Visitors of the Council, which are supposed to be discussed by that body individually as they come to hand. But they may arise in another way. At the last meeting of the Council the Examination Committee was requested to prepare a statistical statement of the percentages of the candidates passed and rejected at the various examinations of the medical authorities, and also to consider and to report to the Council upon the varying proportion of rejections to passes as respects both the earlier and final examinations, and generally to furnish such information upon the apparent anomalies connected with this matter as may

serve to explain them. This subject of the rejections at examinations is understood to be attracting much attention. Professor STRUTHERS writes to us this week on this question, and his letter comes opportunely for the discussion of the report of the Examination Committee by the Council Another report will come up for discussion—that of the Education Committee on the Regulations for Diplomas in Public Health. This is a subject on which the Council has not only strong views but strong powers, and it should persevere in demanding that these diplomas shall be evidence of high proficiency.

THE twenty-second annual report of the Local Government Board for the financial year 1892-93 contains, as usual, a large amount of information which has interest for the medical profession and especially for those who hold public appointments. Among provincial medical officers of health those holding office in 1317 of a total of 1602 sanitary districts do so under the order of the Local Government Board, repayment of one-half of their salaries being made out of county council funds. In the metropolis twenty-one medical officers of health hold their appointments in a similar way, the practice of making these appointments in this manner being steadily on the increase by reason both of the views now held by local authorities and, in the case of London, of statutory requirements.

The amount of pauperism still exhibits wide differences in different parts of England. Thus in the north-western districts 19·5 per 1000 of the estimated population were in receipt of relief, whereas in the south-western districts the rate was practically double—namely, 38·2; and in counties the difference is even more striking than this. While in the West Riding of Yorkshire the rate was only 18·3, it was no less than 44·4 in the agricultural county of Norfolk. There are similar variations as regards the cost of pauperism, and, taking the country as a whole, the rate in the pound of net expenditure on rateable value was 9¾*d.*

From the review of the work of the Metropolitan Asylums Board it would appear that of the current infectious fevers 15,561 cases were admitted into their hospitals during 1892; of these the vast preponderance—namely, 13,093—suffered from scarlet fever, whereas 2019 suffered from diphtheria, 430 from enteric fever, and 19 from typhus fever. The excess of scarlet fever patients was great, the number exceeding by 6556 the largest number admitted in any previous year. The existing epidemic of small-pox in the metropolis began during 1892, and the hospital ships received 352 patients during the year. The work of the Metropolitan Asylums Board was also extended in view of cholera prospects, and arrangements were made by the managers for the immediate reception in case of need of 500 cholera patients, as well as for a reserve of 1600 beds to be ready at short notice. Special ambulance arrangements were also made; but, happily, owing to the fact that cholera in England was, during 1892, limited to persons who had arrived from the Continent of Europe, these arrangements, which practically remain in force up to the present time, had no need to be brought into active use.

Under the general heading of "public health and local administration" we find that during 1892 there was a great increase in the loans sanctioned to sanitary authorities, the amount for the year being no less than £4,340,577, and of this amount more than £3,800,000 was borrowed by urban sanitary authorities. The amount of loans sanctioned under the Artisans' and Labourers' Dwellings and the Housing of the Working Classes Acts amounted to £211,360.

The number of defaulting authorities seems to be substantially on the increase. Whether this is due to a more advanced view taken by the public, or whether it is concerned with the supervising work of county councils, does not appear, but in one sense it is a healthy sign in connexion with sanitary progress. Rochester and Staines failed to perform the duty allotted to them in the definite period assigned, and the result has been that the Local Government Board secured from the High Court of Justice a *mandamus* in each case commanding obedience to their order. The same step was taken with regard to Worcester. Fresh complaints as to default have been made against Chichester, Stevenage, Penally in the Pembroke district, Southwold, Ventnor, the parish of St. Agnes near Truro, Chatteris, Startforth, and other places. In some of these instances a time has been allotted within which the authorities are required to perform their duties, in others schemes of improvement have already been submitted, and in others again a promise to perform certain definite work has been given.

Some considerable progress would appear to have been made in the constitution of port sanitary districts, and power has been given to the London port sanitary authority to exercise certain duties which customarily attach to such an authority. The work in our ports is naturally of the utmost importance in connexion with maintaining that which has been termed our "first line of defence" against the importation of foreign infections.

In one sense it is highly satisfactory to note that between 500 and 600 series of by-laws have been approved for adoption by sanitary authorities under the Public Health Acts, but on the other hand we cannot but recall how often it is that the reports of the Local Government Board inspectors, on which we comment from time to time, draw attention to the fact that by-laws once made are by no means enforced. Indeed, it would almost seem that where an authority makes default in enforcing its own by-laws an individual aggrieved has but little chance of remedy, unless he can induce his fellow constituents to turn out of office the members of the defaulting authority. By-laws are now being made and sanctioned both by the London County Council and by metropolitan sanitary authorities, and we may perhaps hope that the former body will at least take care that London by-laws shall be enforced.

An unusual amount of space is devoted in the report to the question of the analysis of foods and drugs, but the statement made is perhaps of more than usual interest. The average penalty for adulteration has somewhat increased, it having been in 1892 £1 16*s.* 2*d.*; but, on the other hand, many of the fines were extremely trivial in amount, over 100 being less than half-a-crown, and many representations are made to the effect that unless magistrates see their way to impose more substantial fines the highly profitable practice of adulteration is hardly likely to be arrested within any reasonable time. Among the samples examined during the year the percentage of adulteration was highest in the case of spirits; next came coffee, then medicinal drugs,

followed by butter and milk. These five articles were the ones which were most frequently adulterated, the percentage of adulteration in the case of milk being 13·4 of the samples examined; but it must not be assumed that this percentage gives any fair indication of the amount of adulteration practised, for, as pointed out by Mr. HEHNER, the public analyst for Derbyshire, the analyst is bound to pass as genuine all milks which are at least equal in composition to the poorest genuine milk yet found. In the case of milk small fines are perfectly useless, although it must be known that for one sample detected as diluted with water hundreds and sometimes thousands have gone undetected, at a gain, moreover, of large sums of money to the fraudulent adulterator. Public establishments are liable as well as others to suffer from adulteration, but when we read of a workhouse in Cheshire where skim milk was adulterated with half its bulk of water we cannot but feel that those who profess to be, in fact as well as in name, the guardians of the poor are almost as much to blame themselves as is the purveyor of milk. The habit, which has now become so common, of accepting the lowest tender often means, in the minds of all sensible people, that the article to be supplied can only be provided either at a great loss or in an adulterated condition.

The report concludes with a brief summary of the work of the medical department, as to which a separate report is promised, together with some interesting information concerning the metropolitan water-supply, especially in connexion with the subject of filtration; and there is also a special chapter on the subject of local taxation and valuation.

STUDENTS who have registered since Jan. 1st, 1892, have come under the new curriculum of five years' study, and numerous letters have been sent to us in favour of and against the chief features of this change; and as several examinations have now been held under the five years scheme we deem it advisable to point out some of the advantages and disadvantages of the new departure. The alterations will make but little difference to the examinations of the universities, but they have already materially affected both the curriculum and the examinations of the Licensing Boards. The recent regulation of the General Medical Council regarding the preliminary education of the medical student, by which he is now compelled to pass in all the subjects of the examination at one time and is no longer permitted to take them piecemeal, is one of the wisest recommendations which it has made; and we hope that at no distant time it will make this examination, especially on the classical side, a more stringent, and therefore a better, test as to the capabilities of those who wish to enter on the strictly scientific and professional parts of a medical student's career. A proper preliminary examination is the only means of preventing a number of students from entering on a life-work for which they will subsequently find themselves unfit.

After passing a fair preliminary examination the student should be confronted at once with the scientific teaching and acquirements which are deemed necessary before he can pass to his truly professional studies. These scientific studies and the examinations which prove the student's efficiency in such knowledge, should be adart from his strictly professional training. In the universities a year is given to these subjects, and the student has to pass an examination in physics, chemistry, and biology. The severity of this examination varies very much at different universities in Great Britain and Ireland; but in all cases it is a necessary and distinct step in medical education. With the licensing bodies it is not kept so far apart as it should be from the more technical subjects of medical science and practice. At the Conjoint Examining Board in England, at which most of the English students have to present themselves, the student at the end of his first year is required to pass an examination in four parts—viz., (*a*) chemistry and physics and practical chemistry, (*b*) practical pharmacy, (*c*) elementary biology, and (*d*) elementary anatomy. The former three may be studied before registration, but elementary anatomy demands a six months' course at a recognised medical school. It must be obvious to everyone that chemistry and physics and elementary biology are quite on a different standpoint from practical pharmacy and elementary anatomy. The universities appreciate this difference and place these subjects among the studies antecedent to the technical education of a medical student. The Licensing Boards do not. Hence if a student requires the ordinary qualifications, and not a degree, he is placed in this dilemma that if he has passed in these studies before registration he has still a five years' curriculum before him, whereas if he registers on entrance to a medical school and subsequently passes these examinations he has only to study for five years from the date of his entrance. To a certain extent, therefore, the candidate for the diplomas of the licensing bodies is placed at a disadvantage compared with those who seek university degrees, for with the latter the year devoted to science reckons as a year of medical study. Dealing only, at present, with the examinations of the Conjoint Examining Board in England in the purely scientific subjects, there is much to be complained of. Physics, chemistry, and practical chemistry form one section of the examination, and papers are set in physics, inorganic chemistry, and organic chemistry, in which the questions are too few to cover the range laid down in the synopsis. Students with a good knowledge of physics are refused because of their want of knowledge in chemistry, and others with a good chemical knowledge, even of the organic compounds, are referred because of an insufficiency displayed in answering two or three questions in physics. It is obviously unfair that a student should be rejected in *all* parts of an examination, ranging from the diffusion of gases to the chemistry of such bodies as phenol and benzoic and salicylic acids, because he may have failed in one part. The stage of mental development in which he can appreciate physical laws dealing with the common problems of matter, heat, and electricity is entirely different from that in which he can understand the ultimate organic analysis and the determination of the empirical formulæ of the various fatty and vegetable acids and the aromatic series of chemical compounds. On Oct. 1st, 1894, the synopsis in practical chemistry will embrace not only, as now, the identification of metals and inorganic and organic acids, &c., but candidates will be required to exhibit to the examiners preparations of some compounds which they have themselves made, which, although in the main simple, include

bodies like oxalate of ammonium and oxalate of urea. With regard to elementary biology, the synopsis of the Conjoint Board includes "(6) general and distinctive characters of vertebrate animals, and (7) comparison of man's structure with that of other mammalia:" and it is evident that under one or other of these heads almost any question in vertebrate morphology can be asked. Such comprehensive headings make a synopsis useless; and when it is remembered that the fate of the candidate after six months' careful work will be determined by a *viva-voce* examination, lasting for ten or fifteen minutes only, it will be obvious that the result may be most unfair and may frequently prevent the student from pursuing a career for which he is excellently fitted. This is all the more likely to occur from the fact that to many of the candidates it will be their first experience of *viva-voce* examination. Six months of theoretical and practical work cannot be judged even with approximate accuracy in ten minutes, while evidence of practical skill must be taken into consideration before a proper estimate can be arrived at. Practical pharmacy and elementary anatomy should be kept widely apart from these scientific subjects. We propose further to consider the whole question.

THE transference to the London County Council of the duties of regulating common lodging-houses now vested in the Commissioners of Police is the proper sequel to the passing of the Housing of the Working Classes Act. Under this law the County Council clears unhealthy areas and with a view to ensuring the closing of houses unfit for human habitation is empowered to institute proceedings for this purpose if the district authorities are negligent. It can, moreover, under Part III. of this Act, provide and regulate lodging-houses for the labouring classes and has, indeed, already provided one common lodging-house. Under the Public Health (London) Act it can proceed in default of any sanitary authority failing to regulate houses let in lodgings and hence it is already in intimate relation with work of a similar nature to that which it will shortly undertake.

London has hitherto been in an exceptional position, in so far as its common lodging-houses are regulated by the police. Throughout the rest of the country this duty devolves upon the sanitary authorities, and when these authorities are also the police authority this duty is almost invariably performed by its health department. Even in that part of the Metropolitan Police District which is outside the limits of the administrative county the police have for some time ceased to exercise control over common lodging-houses, and hence the contemplated change is nothing more than the completion of a work which has for many years been recognised as desirable, but which has been delayed until a representative body was created capable of controlling this class of premises.

We observe that the St. Giles District Board has put forward a claim to be the body to which the duty of regulating common lodging-houses should be transferred. This is not an unnatural contention of an authority already empowered to register and make and enforce by-laws for the control of houses let in lodgings. The supervision of common lodging-houses is, however, a duty which it is not probable that the Home Secretary would be prepared to impose upon the London district authorities. These houses are occupied by a peculiar section of the community, who are especially migratory in their habits, wandering from one part of the country to another and from one part of London to another, and, as has been recently shown, sometimes carrying the infection of disease with them. It is, therefore, absolutely necessary that the houses which these people occupy should be regulated with equal efficiency in all parts of the metropolis, and this, under existing circumstances, would not be the case if London sanitary authorities as distinguished from the County Council were responsible for this branch of administration. There is, indeed, so much advantage in vesting this duty in a body having relation to the whole metropolitan area that it is not probable that the Secretary of State will alter his decision. The County Council's intimate relation with London sanitary administration and the thoroughness with which its public health duties have hitherto been performed mark it out as especially the body to which this duty should be entrusted.

There is no suggestion in recommending this change that the police have not, so far as the law allowed, done their work efficiently. It is probable, however, that when common lodging-houses are more fully considered in their public health relations it will be found desirable to include under similar regulations the numerous shelters which have recently come into existence and which occupy a position somewhere between the ordinary common lodging-house and the casual ward. For this purpose further legislation will be required, which can be more readily obtained by a representative authority. Again, perhaps larger powers of control than the police exercise may be found to be necessary for the purposes of London, and this, if the need can be shown, will be more readily granted to the Council. The proposed change, therefore, is one that is eminently desirable, and which, we trust, will not be unduly delayed.

Annotations.

"Ne quid nimis."

THE TEACHING UNIVERSITY QUESTION IN LONDON.

THE report of the Royal Commissioners with regard to the formation of a Teaching University in London is under final consideration, and will probably be made public before the Christmas vacation. It is generally understood that it will be adverse to the founding of a special Teaching University, but will favour a very extensive transformation of the existing University of London, so as if possible to enable it to add a completely planned teaching side to its present examining duties. Such a change involves the application for a new Charter for the University of London, and until the full details of the scheme are known it would be premature to discuss the probable attitude of the various bodies interested—namely, University and King's Colleges, the Medical Schools, and the Senate and Convocation of the University of London—and the chance of a final settlement of the question being attained. We hope that the Commissioners have suggested a plan which will materially alter the present position of the London medical student.

THE CARE OF THE WOUNDED IN WAR.

WE are glad to notice that at last something is to be done to afford the Army Medical Staff an opportunity of obtaining some practical knowledge of their field duties during war.

Mr. Campbell-Bannerman, in reply to a question in the House of Commons from Mr. D. Plunket, said that steps would be taken next summer to afford a fortnight's practical instruction in what, we would add, is the most essential and important duty that the medical service can be called upon to perform. This is no question of grievance on the part of the medical staff; it has a much wider scope and significance than concerns the medical officers themselves, for it gravely affects the national interests that the Army Medical Service should not be kept in a state of unreadiness for war. There is no need to go into the subject further at the present time, for in doing so we should only be repeating ourselves and stating what must, we imagine, be obvious to everyone possessed of any forethought and common sense. That medical officers and men of the Medical Staff Corps should be thoroughly acquainted with the machinery they will have to use in the field and be practised in the methods of using it seems to be so self-evident as to require nothing beyond its bare statement to carry conviction with it. A fortnight's practical instruction is not very much, and its utility will greatly depend upon its scale, its frequent repetition, and on how it is carried out. In the meantime it is, at any rate, a good beginning, and will afford medical officers an opportunity of actually seeing field hospitals and equipment, of which a large number of them, it is alleged, have only heard up to the present time.

"PHYSIC AND PHYSICIANS AS DEPICTED IN PLATO."

UNDER this title Dr. Osler delivered an address before the Historical Club of the Johns Hopkins Hospital. The existence of such a club, it appears to us, should fulfil a useful function. The engrossing cares of the present are somewhat inimical to the development of the antiquarian bias in most instances; but by those who have the time and leisure to study carefully the thoughtful gropings of the human mind in the dawn of science, among many conclusions which later observation must reject, some gems of thought are frequently to be gathered. The interdependence of all human effort is also shown by this lecture, for the material upon which it was based was culled from the memorable work of that ripe scholar lately deceased, Benjamin Jowett of Balliol College, Oxford. The anatomical and physiological ideas of Plato, based as they largely were on speculation rather than on observation, are essentially Platonic, not Aristotelian, notions, and they enchain us by the brilliancy of imagination rather than by the solidity of their foundation. As another of our American *confrères* has remarked: "The philosophy of Plato is a gorgeous castle in the air; that of Aristotle a solid structure, laboriously, and with many failures, founded on the solid rock." When, however, we leave the purely physical speculations of Plato and consider his psychology we find that it has, as Dr. Osler remarks, a "strangely modern savour." Nor need this surprise us, for the operations of the human mind were open to observation, subjective and objective, ages before the scientific investigation of the machine which the mind controls. The doctrine of the sound mind and sound body being frequently related to one another was maintained by Plato with eloquence and reason; and in his advocacy of the paramount influence of diet and regimen in the treatment of disease, as also in his condemnation of "the purgative method," he would have the approval of many physicians of the present day. The Platonic method of descending from the general to the particular, of considering the whole when discussing the part, had as a wholesome corollary the regarding of each part of the body as related to the entire system. "Charmides had been complaining of a headache and Critias had asked Socrates to make believe that he could cure him of it. He said that he had a charm which he had learnt, when serving in the army, from one of the physicians of the Thracian King, Zamolxis. This physician had told Socrates that the cure of the part should not be attempted without treatment of the whole, and also that no attempt should be made to cure the body without the soul. ..... The charms to which he referred were fair words, by which temperance was implanted in the soul." The status of the physician in Plato's day seems to have been regulated according as he was a private practitioner or a "State physician," and before he was deemed to be worthy of the latter position it appears to have been essential that he should have been in practice for some time and have attained a considerable reputation—an eminently rational desideratum not always demanded in the present day. As regards his classification, or what we may term Court precedence, "the physician or lover of gymnastic toils" seems to have been placed fourth, and, it is needless to add, that in the Socratic system the philosopher ranked first. The interpretation given to the dying words of Socrates, "Crito, we owe a cock to Æsculapius," is that thanks are due to the patron of medicine from one who, by quaffing the fatal draught which robs him of mundane existence, is enabled to realise the glories of the hereafter. Dr. Osler pays a warm tribute to Professor Jowett, whom he terms "the great interpreter of Plato to this generation," and, we may add, to generations yet unborn.

PROFESSIONAL EXCLUSIVENESS IN SWITZERLAND.

WE have commented more than once on the restrictions imposed by the Swiss Confederation on the foreign—particularly the English-speaking—practitioner in its centres of tourist resort—restrictions which make it illegal for a British practitioner, however highly qualified, to prescribe for a compatriot unless provided with the Federal diploma. We pointed out that this unenlightened "protection" of native work or skill would react injuriously on the resorts in question, dependent, as most of them mainly are, on the outside world for their prosperity. Our admonition, we are happy to think, has not been without effect. More than one canton has bethought itself of the unwisdom of deflecting the stream of travel past its borders to other resorts where professional exclusiveness is unknown and, in one instance at least, has actually rescinded the law which made it illegal for a foreign practitioner to prescribe. The Canton Ticino, at a late meeting of its Grand Council, has taken an honourable initiative in abrogating the restriction on non-Swiss medical men, and henceforth the possession of a Federal diploma is not a *sine quâ non* for practice. The restriction, as we have already pointed out,[1] weighed with peculiar hardship on our Italian *confrères*, many of whose compatriots are domiciled in Switzerland; while the Canton Ticino itself is so essentially Italian in population, in language, in customs, and in institutions that it is only by a political accident that it is not included in Italy. What this canton is to the Italian peninsula Lucerne and the Grisons are to the British Isles. For a considerable portion of the year they are so completely occupied by the English-speaking public that, in everything except political classification, they may almost be regarded as "British possessions"; while they certainly derive from the "British occupation" the prosperity, not to say the means of subsistence, that support them for the remainder of the twelvemonth. In these circumstances, to insist that the British practitioner shall not prescribe for a compatriot unless furnished with a Swiss diploma is not only unfair but eminently impolitic, as the cantons, in their own interests, have begun to find out. "Point d'argent, point de Suisses," says the French proverb, in allusion to the old compact between the Swiss Guards and their Absolutist employers.

[1] THE LANCET, Jan. 21st, 1893.

"Point d'Anglais, point d'argent," is what the deflection of British travel into other channels means for the Confederation; and it is as having taken at least one important step to keep the native channels flowing with the gold of their best customers that the Canton Ticino deserves the thanks and, what is more, the imitation, of federal Switzerland.

DISPUTES BETWEEN MEDICAL MEN.

IT is greatly to be regretted when medical men take cases into court which should be settled in a friendly way. Such was the case in the Croydon County Court, in which the plaintiff, Mr. Erskine Herbert Worth, sued Mr. George Bridgeford Potter for five guineas for acting as *locum tenens*. The plaintiff had offered to do the work gratuitously, but the defendant would not hear of such a thing. The defence was that there was no engagement to pay for the services, but only to make a present, and that at the time the plaintiff was entitled to his claim, not having obtained a qualification. His honour said that it was a case for friendly settlement, and after a brief conference it was agreed that the defendant should pay the sum of three guineas as a *solatium*.

DIAGNOSIS OF DIPHTHERIA.

THE question of the diagnosis of diphtheria by means of cultivations obtained from the throat in membranous affections of that region has lately received considerable attention. Two papers bearing on this subject appear in the *American Journal of the Medical Sciences* of November, and are well worthy of perusal. Dr. F. H. Williams of Boston writes upon Diphtheria and other Membranous Affections of the Throat. He points out that the presence of diphtheria is characterised by the presence of the Klebs-Loeffler bacillus, and that although other organisms, chiefly various forms of cocci, may also be found, they can easily be distinguished by means of the microscope. Dr. Williams, however, states that this test is not infallible, as for some reason, such as the presence of a small quantity of corrosive sublimate, the bacilli may not grow when planted, and therefore that they may not be found in the cultures. He does not mention whether any fallacies may arise owing to the presence of rods somewhat resembling the Klebs-Loeffler bacillus and difficult to distinguish from it by means of the microscope only. A very interesting part of Dr. Williams' paper is that dealing with the treatment of the condition, and several cases are detailed in which the patients were treated satisfactorily by hydrogen peroxide solutions. In conclusion he insists upon the following points: (1) the necessity of cultures as a means of early diagnosis; (2) the coincidence of diphtheria and other diseases; (3) the bacteriological examination of all patients suffering from scarlet fever, typhoid fever, measles, or other diseases, who have membranous throat affections; (4) the bacteriological examination of specimens from the throats of all patients suffering from diphtheria before isolation is ended; (5) seven and a half volume solutions of hydrogen peroxide are weak germicides; (6) the advantages of the local application of strong hydrogen peroxide solutions (from 25 to 50 volumes) in diphtheria; and (7) the importance of frequent early local applications of the same remedy. The second paper referred to is by Dr. W. T. Councilman on the Pathology and Diagnosis of Diphtheria. He also gives his experience in the diagnosis of diphtheria by means of cultures, and maintains that the Klebs-Loeffler bacillus can easily be recognised by means of the microscope. He comments on the fact that organisms are to be found which are apparently in morphology and culture identical with the Klebs-Loeffler bacillus, but which show a decided difference in virulence and are sometimes called the "pseudo-diphtheritic bacillus"; but he is of opinion that the bacillus so termed represents simply a modified and less virulent form of the true diphtheritic bacillus. He grows his cultures on blood serum and sugar bouillon, and he states that but few of the organisms to be found in the throat find suitable conditions for their growth in such a medium. Micrococci and bacilli, however, are often to be found. The micrococci are usually the diplococcus lanciolatus, streptococci and staphylococci. Streptococci are more frequent than other forms. One of the most common bacilli to be found is a short organism, growing in pairs, with pointed extremities. Dr. Councilman also points out that it is impossible to distinguish by the macroscopic appearance the colonies of diphtheritic bacilli from the colonies of both streptococci and staphylococci.

REDUCTION OF SPINAL DISLOCATION.

AT the recent meeting of the American Neurological Association Dr. G. L. Walton of Boston read a paper on this subject. He had some time previously published sixteen cases of dislocation of the spine coming under his notice, and since then he had seen several more of the same character, believing that it was not a rare condition but one which was frequently overlooked. Reduction by extension is usually unsuccessful, but the fact that spontaneous reduction sometimes occurs suggested that direction is more important than force in any efforts at reduction and led him to the discovery of a method which, so far as experiments with the spine and cadaver can show, is a correct one. It has once been put in force with an actual case, and that successfully, by Dr. Beach of the Massachusetts General Hospital. The method is best illustrated by explaining such a case—e.g., in which the left articular process of one vertebra has slipped forward over that of the vertebra below and fallen into the depression anterior to the articular process. Such a dislocation would bend the head to the left, turning the face to the right. The reduction in this case would be effected by extending the head diagonally backward to the right so as to elevate the articular process. Rotation to the left would then replace the dislocated vertebra. In the case of a bilateral displacement the reduction would be effected in stages. So says the *Boston Medical Journal*. Manipulation of a fractured or dislocated spine (and it is often impossible to tell which condition is present) is always a matter of some difficulty and delicacy on account of the important structures which might be injured. It is to be hoped that Dr. Walton's method may not with further experience be found to have drawbacks such as might render its employment dangerous.

THE LATE PRINCE ALEXANDER.

THERE was an element of tragedy and pathos in the death of the soldier-Prince Alexander on the anniversary of his victory at Slivnitza, when he may be said to have made the nation which he served and loved so well in his life. It is asserted, too, that the disease from which he has just died at the early age of thirty-six years first manifested itself soon after that battle and was attributable to the hardships to which he was exposed during his brilliant service in the field, and that during the delirium that attended his fatal attack he was heard to utter, "Rather die than lose the battle." The life of the late Prince was a romantic and chivalric one, but on its varied incidents and those which immediately preceded his final relinquishment of the throne of Bulgaria there is no need to dwell. The pinnacle and precipice of human hopes frequently lie close together. The battle of life is not always to the strong; and even a cursory acquaintance with human history shows that success is more frequently the reward of merit, ability, or nobility of character on the stage or in fiction than in real life. It has been truly remarked that the lives of great unsuccessful men would make a most interesting book. From the description

given of the Prince's fatal illness it may be conjectured that it was attributable to a recurring attack of ulcerative disease and abscess of the appendix vermiformis followed by peritonitis from perforation. It is stated that in the late Prince's case the illness was from the first bound to prove fatal, and that it has been ascertained that no operation could have prevented the event. This disease has, as is well known, of late years received a great deal of attention, and operative procedures, combined with antiseptic measures, have been sometimes followed by very successful results. As our readers are well aware, it used to be almost exclusively ascribed in text-books to the introduction of some foreign body, such as a cherry-stone, the seeds of some fruit, hair from a tooth-brush &c.; but the affection frequently occurs without the introduction of foreign bodies of this kind, or from the irritation and increased secretion arising from an insignificant fecal fragment finding its way into the appendix. Apart from a tuberculous affection, other morbid processes may take place in the glandular structures and give rise to ulcerative disease and abscess of this part.

THE DIFFUSION OF SMALL-POX.

THERE is still a considerable prevalence of small-pox in several parts of England, and the number of districts invaded by the disease is, as might have been anticipated at this season of the year, slowly but steadily on the increase. In Birmingham the fresh attacks last week were 77 in number, and the town council are making rapid progress with a new hospital, special to small-pox, in a more isolated part of the borough than is the case with regard to the existing one near the workhouse. In Bradford there were 51 fresh attacks, and it almost appears as if anything like effectual isolation were no longer practicable. Indeed, a local paper, dealing, we may hope, a little loosely with round figures, says that immediate requirements would need that the wants of "1000 people" should be met. The result is, according to the same source, that it is intended to fasten up the houses of people who have been in contact with patients suffering from small-pox, and to "arrange with the police for a system of espionage," with a view to the protection of the public. Bradford, like Leicester, makes prominent and grave default in the matter of vaccination, and in both towns it has been shown how hopeless it is to rely on mere isolation even when this is supplemented by measures which are beyond the law and hence beyond the power of the local authorities to enforce. In Walsall there were 46 new attacks, and there is a rumour that the epidemic has been—in part, at least—promoted by the influence of aggregating small-pox patients in the infectious hospital. Among other fresh attacks are: Bristol, 11; West Ham, 7; Wimbledon, 4; Rowley Regis, 4; Bath, Handsworth, Oldham, and Wakefield 3 each; Chatham, Willesden, West Bromwich, and Smethwick 2 each; and Leicester, Derby, St. George's Bristol, and Hornsey 1 each. In Wimbledon the inadvertent isolation of small-pox on the same site as other infectious fevers has led to the spread of the disease to other patients, although some of them were in separate tents and at a distance from the building into which a small-pox patient had been admitted. The diffusion being due to an error, or rather the inability to diagnose a disease in its incubation stage, relieves the authority from such part of the blame as is involved in all but the absence of proper arrangements for dealing with an isolated occurrence of that kind without risk to other patients whom they are professing to isolate. The disease still prevails at a number of other places, as to which no accurate data are forthcoming. A further fatal attack has occurred at New Quay; there have been 9 cases in all in the Sedgley district; and at Leeds it has been practically decided to erect a new hospital in order to isolate patients suffering from small-pox. In the metropolis there were 21 fresh cases last week, and there has been a slight diminution in the number of patients under isolation by the Metropolitan Asylums Board. On the 20th inst. the number was 135.

PATHOLOGICAL LABORATORY AT CLAYBURY ASYLUM.

WE are glad to observe that the London County Council have this week accepted the plans prepared by Mr. G. T. Hine for a pathological laboratory and museum at Claybury Asylum. The building will, we understand, meet every requirement for thorough pathological and chemical investigations, and it will give a great and much-needed impetus to the study of the pathology of insanity. The office of pathologist will be filled in due course, and the holder will not only be able to avail himself of the clinical opportunities afforded by Claybury Asylum but will be furnished with pathological material from all the London county asylums.

MUSCULAR RIGIDITY WITH NOCTURNAL INCONTINENCE.

IN the last number of the *Neurologisches Centralblatt* Dr. Freund of Vienna directs attention to a curious condition, which he finds present in many cases of nocturnal incontinence of urine. About half of the children who suffer from this, he says, display a curious condition of hypertonicity of the lower extremities, which often exists in a very high degree, but without any other sign of functional disturbance. This is demonstrated as follows: when the child is stripped and placed on a table, and the feet are seized and an attempt made to separate the legs, a sense of resistance is experienced, which, however, is gradually overcome. When the feet are set free the legs are again adducted, the condition determining this being one of adductor spasm. A similar spasm is also present in the extensor cruris. The explanation of the condition is difficult. It is apparently not the effect of mere shyness, for other children tested in a similar way do not exhibit the same peculiarity; nor can it with reasonable probability be asserted that it is an indication of a slight degree of spastic paraplegia, as no other sign of such a condition is present, and the children are able to walk and run in a perfectly natural manner. The fact that the condition is only present in about half the cases may in time, perhaps, offer some key to the solution of the difficulty, for it is just possible that this hypertonicity of certain muscles may be found to be only present in certain cases, or in a certain class of cases, of enuresis. There does not seem to be any reason for suspecting that the cases in which the symptom is present are of the nature of slight epilepsy, neither is there any necessary or constant relation between the intensity of the hypertonicity and the severity or obstinacy of the incontinence.

SEPARATION OF MUSCLE-CELLS IN THE HEART.

IN the October number of Virchow's *Archives of Pathological Anatomy and Physiology* Professor Browicz of Cracow has an article upon the Significance of Changes in the Uniting Medium *(Kittsubstanz)* of the Muscle-cells in the Heart. The subject appears to be important, but has comparatively recently come under observation and cannot yet be said to have been satisfactorily elucidated. This disintegration or fragmentation of the cardiac muscle, which was first described by Renaut in 1877, has been regarded by so good an authority as v. Recklinghausen as, if not a post-mortem condition, in any case one which occurs not earlier than the death agony. Browicz, however, from his own investigations, and supported by the recent microscopic researches of Prewoski of Warsaw and the views of Tedeschi, has come to the following conclusions: 1. The distinctness of the uniting medium or cementing material which is to be seen in some cases in fresh heart-muscle, especially in those

in which it appears as broad stripes, as though swollen, or in those in which it exhibits a rod-like structure (first noted by Browicz), is not a post-mortem appearance. He regards such a condition as the initial phase of fragmentation, as a pathological change, and as the loosening of the connexion between the cells forming the muscular cellular tissue. This condition by itself may, in his opinion, exercise an influence upon the functional activity of the heart. 2. It is a change which may lead to a complete separation of the muscle cells, and even to the complete alteration of the muscular structure of the heart, inducing the utmost confusion in the grouping of these cells. 3. This fragmentation may extend over wide areas of the heart's substance and is in such cases the cause of enfeeblement of the function of that organ and of sudden death. 4. Fragmentation may also occur in a disseminated manner *(heerdweise)* and is then the cause of cardiac insufficiency. 5. It is not by any means a rare phenomenon. 6. It may be observed in an otherwise normal heart-muscle; in cases, that is, in which the bloodvessels, interstitial tissue, and even the muscle-cells exhibit no alteration. 7. It may also, however, be found in association with cloudy swelling and fatty degeneration, or with changes in the interstitial tissue of the cardiac walls and papillary muscles. 8. Disseminated fragmentation may, as Robin believes, be the cause of rupture of the heart. 9. It may also, like arterial vascular changes, be the cause of fibrous degeneration of the cardiac muscle. As regards the age at which this phenomenon is observed, Browicz does not consider it to be necessarily a disease of old age, but asserts that it may be met with in younger subjects. He draws a distinction between the undue visibility of the cement joints *(Kittleisten)* and the separation of the muscle cells. The former he regards as the initial pathological condition, and a homogeneous swollen appearance of this substance as a further stage, which may be followed by complete separation of the cells. It is this latter condition or ultimate stage which, in proportion to its general or localised character, exercises an influence upon the functional activity of the heart. Finally Browicz is of opinion that the fragmentation of affected cells is brought about by the contraction of healthy fibres, as in the case of waxy degeneration of skeletal and cardiac muscle. He does not discuss the clinical aspects of the question, which appears to have been done by Renaut and Mollard.

PARENTS AND SCHOOLMASTERS.

IN *The Times* of Nov. 9th, 1893, appeared the following paragraph:—

"PARENTS AND SCHOOLMASTERS.—Some months ago an assistant master at a large public school administered summary chastisement to a scholar by a series of severe boxes on both ears, with the result that the drum of one of the ears was burst. The parent, after bringing the matter before the governing body, and not considering their reply satisfactory, brought an action against the master in the Court of Queen's Bench for assault. The master has expressed his deep regret and paid a sum into court, which has been accepted. The case has been more than once referred to in the press, and has excited considerable interest. The boy remains at the school."

The case is identical with one which has been referred to more than once, the parent being a well-known London physician. It seems to us strange that so dangerous a practice should not long since have been severely stopped at any large public school, and we have no doubt that had the boy been a scholar at any Board school in the kingdom the case would have promptly appeared with all details in a police-court, and the master would have been summarily dismissed. That publicity has been avoided speaks for the forbearance of the parent both to the master and to the school. The extract does not say what has been the fate of the master at the hands of the school authorities; but he is, in any case, less to blame than the authorities, who have allowed such punishment to be possible and who apparently failed to deal with the offence adequately. In the case of an unhealthy ear death has repeatedly followed boxing the ears. We fear that, in the case of some, if not all, of our large public schools there is an impression that there is no appeal beyond the school authorities and that any such appeal fails of its object and involves both parent and scholar in such unpleasantness that either the parent drops the case or the boy has to leave the school. In the case under notice the parent disproved both suppositions, and we hope and think that his action will have done much to render this dangerous and unwarrantable practice altogether obsolete. At all events, the master and the school have much to thank him for in his efforts in this direction, as well as for the reticence which he has shown in keeping names and places from the public. In any future instance the i's could doubtless be dotted and the t's crossed.

CONGENITAL HERNIA INTO THE UMBILICAL CORD.

DR. COLLINS WARREN of Boston has recorded in the Transactions of the American Surgical Association, 1893, two very interesting cases of this somewhat rare malformation. In the first case the cord at the umbilicus was greatly distended, forming an opaque tumour 6½ cm. in diameter. An operation was at once performed, the sac opened, and the contents found to be the liver—apparently the whole of it. The mucous tissue of the cord was dissected off the liver, the umbilical vessels were tied and divided, the liver reduced within the abdominal cavity, and the edges of the opening were united by sutures. This operation was done when the child was about twenty-four hours old. He made a good recovery. In the second case the sac was transparent and formed a pear-shaped tumour seven inches long. It was found to contain the bowel from near the duodenum to the descending colon. After enlarging the aperture the bowel was all placed within the abdomen and the edges of the opening were closed with sutures. The child was very ill for several days, but eventually made a good recovery. These cases illustrate well the conditions met with in this deformity—the protrusion of the liver or of a great length of the intestine. When of small size they contain Meckel's diverticulum and the loop of ileum to which it is attached. When larger, as in Dr. Warren's cases, the bowel as low as the sigmoid flexure may be met with, or the liver in part or as a whole. The complete success attending Dr. Warren's operations is a great encouragement to deal with these cases at once in the same way. In a very few instances recovery has followed palliative measures only, even when the thin sac has sloughed. But this exposes the child to a great danger of general septic peritonitis, and the immediate return of the viscera and closure of the abdominal opening should be considered the appropriate treatment. The operation ought to be carried out with the least possible delay.

THE INVENTION OF LANOLINE.

A QUESTION of some considerable commercial and scientific interest is at present occupying the attention of Mr. Justice Romer in the Court of Chancery, where an action has been brought by the Benno Jaffe and Darmstatter Lanolin Fabric against Messrs. J. Richardson and Co. upon the ground of infringement of the lanoline patent. The defendants are manufacturers of an ointment sold under the name of annaspaline, of which purified wool fat is a constituent part. The plaintiffs claim under their patent grant to be entitled to restrain this manufacture upon the ground that it cannot be undertaken without producing lanoline, and that in effect anaspaline is a compound of lanoline with some other

constituents, although the lanoline is never separately produced or contemplated by the defendants. Of the merits of this part of the controversy more will be known when the defence has been fully submitted to the court. At the time of going to press we understand that the defendants' case is being opened by their leading counsel, Mr. Aston, Q.C. The matter of special interest, from our point of view, which the case presents, consists in this—that the defendants have undertaken to show that this invention was in substance known sixteen or seventeen centuries ago and communicated to the world by that very ancient writer on materia medica, Dioscorides. Among the witnesses called for the plaintiffs we recognise the names of Professor Dunstan and Dr. Lauder Brunton, while Professor Dewar represents scientific chemistry, apart from pharmacy, and Mr. Burroughs speaks of the novelty of the patented article considered as a commercial product. With such an array of experts it is certain that both the scientific and practical questions involved will be adequately discussed, and we shall look with no small interest for the result of the discussion.

TUBERCULOUS PLEURISY.

THE progress of medical knowledge tends to reduce to the level of signs conditions which at an earlier period enjoyed the dignity of being considered to be independent diseases. People may still die from "the dropsy," but we are inquisitive now to learn from what kind of dropsy—cardiac, renal, hepatic, or other. Similarly a once sufficient diagnosis of pleurisy no longer satisfies us, although our present knowledge in the differentiation of this sign is by no means so complete as in the case of dropsy. In the Shattuck Lecture on Tuberculous Pleurisy, delivered before the Massachusetts Medical Society, Dr. Osler has ably dealt with an important and sometimes obscure subject. Of 101 cases of pleurisy which reached the post-mortem room he determined that about 32 per cent. were tuberculous. To the physician in practice the main interest in the condition lies in its diagnosis, and this is not always an easy matter. The physical characters of the exudation in a majority of cases reveal nothing distinctive. Dr. Osler, however, is of opinion that a "thin sero-purulent exudate, a little opalescent, often with a greenish tint, and which microscopically contains a granular fatty matter and only a few leucocytes, is very suggestive of a tuberculous lesion." It will be easily understood, however, that such a test cannot be regarded as infallible. The bacteriological examination of the exudation has also been proved in the majority of cases to be sterile, although in some instances tuberculosis has been successfully transferred to guinea-pigs by intra-peritoneal injection of the human exudation; when this can be done the evidence afforded is of course valuable. The diagnosis would seem mainly to depend upon the discovery of tuberculous disease elsewhere, especially in the lungs. The importance, therefore, is apparent of a thorough investigation of "the antecedents, family and personal, the thorough inspection of the groups of lymph glands contiguous to the pleura, and the repeated examination of the expectoration, which may contain tubercle bacilli from even a very small focus of softening tubercle in communication with the bronchus." Dr. Osler rightly indicates as the most suspicious cases those in which the "fluid constantly recurs in spite of repeated tappings." He also makes an important clinical observation when he states that "the risk of the compressed lung becoming the seat of tuberculosis is not very great." The danger of this condition is rather that re-expansion of the lung is imperilled. The treatment of pleurisy, tuberculous or otherwise, is, of course, the same, unless its tuberculous character is undoubted, and then we can only at present insist upon the hygienic and nutritive indications, well known but too rarely of lasting benefit. The somewhat mysterious recovery, however, in many instances from peritoneal tuberculosis, together with the discovery of the bacillus, engender the rational hope that by preventive, operative, and therapeutic methods medicine will yet be able to cope with a scourge which has been calculated to cause a seventh of the total human mortality.

THE PREVALENCE OF INFLUENZA.

INFLUENZA is still rife at Llanelly, and the disease appears to be assuming a more severe type than heretofore. At Cardiff a large number of persons are confined to their beds with the disease, and at the Manchester Industrial Schools, Swinton, about 100 children and 12 officers have been attacked. The General Post Office at Edinburgh has a large number of its officials down with influenza and the cases are rapidly increasing. Abroad we hear of the disease in Bavaria, where several deaths from lung complications have occurred, in Berlin, and in the South-western Provinces of Russia. In Odessa alone there are stated to have been over 10,000 cases.

DISLOCATION OF THE SPINE.

AN unusual condition occurring in a patient is described by Dr. Holmes of Denver in a recent number of the *Philadelphia Medical News*. The patient was a man aged forty-nine, weighing 11½ st., who fell from a ladder which he was climbing. He fell backwards a distance of sixteen feet, alighting on the back of his head and shoulders. He was paralysed instantly in all four limbs, but retained consciousness and was able to speak. When first seen he lay without pain except at the back of the neck. His face was flushed, the surface of the body was cold, and the pulse could not be felt at the wrist. The heart's action was regular but very weak, and only 36 per minute. The temperature was found to be only 92·5° F., and this observation was verified. The respiration was entirely diaphragmatic, very shallow, but regular and only 10 per minute. There was complete paralysis of all four limbs, and, with the exception of partial perception of tactile sensation on the outer surface of each arm, anæsthesia below the neck. It was found on examination that there was a point at the back of the neck, between the fourth and fifth cervical vertebræ, where there was a distinct depression and where pressure with the finger caused pain. This, it was judged, was a dislocation of the fourth cervical vertebra, and an attempt was made to reduce it. There was after extension a "click" as of something returning, and no further manipulation was practised. No improvement, however, resulted, and the patient gradually died of asphyxia forty-three hours after the accident. It should be mentioned that well-marked priapism and retention of urine existed during the whole of the time after the accident; but the chief interest of the case lies in the fact that at the necropsy the diagnosis was entirely confirmed, the lesion having been a dislocation forwards of the fourth cervical vertebra, causing pressure on the cord and complete disintegration of its structure.

MEDICAL REPORT FOR 1892 ON THE STRAITS SETTLEMENTS.

WE have received from Mr. Max F. Simon, the principal civil medical officer of the Straits Settlements, his official report upon the health of the colony throughout the year 1892. The report shows that the general health was good. The Settlements remained practically free from cholera, 3 sporadic cases only having occurred in Singapore. Three ships also were detained in the quarantine station at Singapore on this account, and of the affected passengers 7 who were landed at St. John's Island died. There were outbreaks of small-pox in Penang, Wellesley, and Malacca; but the special reports of the colonial surgeons to those provinces, which appear as appendices, show that the

death-rates in the latter two were not materially higher than in former years, while the death-rate in Penang was actually lower; but it must be remembered that there have been outbreaks in Penang previously which were not combated so effectually and which then produced the higher rate. In this connexion Mr. Simon warmly commends the efforts of Dr. Kerr, the present colonial surgeon. With regard to beri-beri, the total number of cases treated in the three large pauper hospitals during 1892 was considerably less than during 1891. The percentage of mortality was about the same for the two years in Penang; but in Singapore and Malacca it was much smaller, the figures falling from 29·47 and 19·39 to 14·22 and 5·78 respectively. Dr. Leask, the colonial surgeon at Malacca, attributes this lessened mortality chiefly to the use of wheat-flour in the treatment, and gives a statistical table in support of his belief. This table shows that of 310 cases placed on a wheat-flour diet only 15 died, or 4·08 per cent., while of 460 cases not so treated 61 died, or 13·02 per cent. Both Mr. Simon and Dr. Kerr, having the facts before them, speak strongly of the mischief that has been done by the repeal of the Contagious Diseases Acts. Mr. Simon says, referring to the figures in the report of Dr. Mugliston, the colonial surgeon of Singapore: "Singapore is the only Settlement in which any women freely and voluntarily presented themselves for examination in 1892; 95 so presented themselves, and of these 83 were found to be diseased, a proportion of 87·4 per cent., as against 74·5 per cent. in 1891, and 28·29 per cent. in 1890." He rightly considers that comment on the figures is unnecessary. Dr. Kerr says: "I consider the abolition of the contagious diseases ordinance largely to blame for the ravages now committed by syphilitic disorders." From the figures in Mr. Simon's general return of all sick during the year, it would seem that the Straits Settlements under European efforts are becoming more tolerable to European lives, for the percentage of deaths to cases treated has fallen among the Europeans from 4·55 in 1891, to 3·83 in 1892.

THE GALLOP RHYTHM IN HEART DISEASE.

DR. HANDFORD has recently written an article[1] on the significance of the gallop rhythm in cardiac disease. After giving a *resumé* of current opinion on the subject he states the conclusions to which his own observations have led him. These given generally are: 1. That when the extra sound is pericardial, and indicates a localised roughness of that membrane, the significance of the sound in question is *nil*. 2. That when it closely resembles a reduplication of the second sound it is of considerable diagnostic value—especially in mitral stenosis—but of little prognostic import. 3. That when it resembles a reduplication of the first sound it indicates serious cardiac weakness; and that when the rhythm is so far altered that there is no "accent," and all the sounds appear to be equal or nearly so, it is usually the precursor of death. It then resembles the "tic-tac" rhythm or embryocardia, which is also a phenomenon frequently observed shortly before death. Dr. Handford then enters more into detail concerning the conditions under which the above physical sign is observed, and, while admitting that it requires further elucidation, he considers that a clearer conception of its significance might afford important diagnostic and prognostic aid to the physician. In the title of his paper he uses the term "gallop rhythm," while in discussing the subject later he employs the phrase *bruit de galop*. These are, no doubt, frequently used as convertible terms; but we conceive that it would be of advantage, in the meantime, were the former term adhered to, as it merely denotes a phenomenon capable of being observed, while the French term (Potain's) to English ears imports a theory of its production, as we do not usually regard the terms "cardiac sound" and "cardiac bruit" as synonymous. Dr. Handford cogently remarks that when capable observers express contradictory opinions about the same thing it usually transpires that they are dealing with things which are not quite the same. We would merely add that in the discussion of such matters an adherence to simplicity and unity of terminology would tend to promote a right conception and interpretation of physical signs. Regarding, as we do in the present day, the functional capacity or force of the heart to be the primary consideration in disorders of that organ, so careful an investigation of a physical sign as Dr. Handford's, calculated as it is to guide us in appreciating the power of the heart under certain circumstances, is welcome.

[1] Quarterly Medical Journal, vol. ii., pt. 1.

OPTIC NEURITIS AFTER FEVERS.

IN the *Journal of the American Medical Association* Dr. White gives a contribution on a subject of no little interest not only to ophthalmic surgeons but also to physicians—viz., the occurrence of optic nerve troubles after acute fevers, especially typhoid fever. Such conditions do occur apparently after different fevers, for neuritis has been recorded following measles and also scarlet fever, while its occurrence after typhoid fever and malaria seems to rest on equally firm evidence. Dr. White records three cases observed by himself. The first was that of a lady just convalescent from typhoid fever, who complained of inability to use the eyes. There was distinct swelling of the discs, and that the condition was neuritis was confirmed by an independent ophthalmologist. Six months later the condition had entirely cleared up. The second case was one of optic atrophy occurring in a man aged twenty-eight as a sequel to typhoid fever. His sight became gradually worse, in spite of improvement in his general health, and when first seen there was characteristic atrophy of the optic nerves. He was put on strychnia and continued to take increasing doses of it until he was taking as much as one-fifth of a grain (!) three times a day. Toxic symptoms were then produced, necessitating a reduction of dose, but his vision increased from $\frac{5}{200}$ in the right and $\frac{5}{70}$ in the left eye to $\frac{5}{30}$ and $\frac{5}{20}$ respectively. The third case was one of what was supposed to be slight malarial fever. In this there was a certain amount of blurring in one eye and actual neuritis in the other, with considerable impairment of vision. The patient gradually regained her vision, and finally both nerves appeared to be quite normal. These cases are interesting, and they are very important. Considering the profound effect so frequently exerted by poisons—especially in connexion with blood states—on the nervous system at various points, it is not surprising that the optic nerves should sometimes suffer. The importance of recognising any such condition and of adopting suitable treatment cannot, of course, be exaggerated.

THE council of the Harveian Society have departed somewhat from their usual routine in inviting an exponent of sanitary science to deliver the Harveian Lectures for the present year. The course will be undertaken by Professor Corfield, who will take for his subject "Disease and Defective House Sanitation." The lectures will be delivered on Dec. 7th, 14th, and 21st. The attendance of all members of the medical profession will be welcomed.

THE Registrar of the Royal College of Physicians of London has issued a circular to the Fellows, Members, and Licentiates asking that any change of residential address which has occurred since January, 1892, may be notified to him. This course is adopted in order that the annual official List may be made as accurate as possible.

THE death is announced of Joseph Bray Gilbertson, M.D. Aberd., M.R.C.P. Edin., who in 1886 succeeded his brother as coroner for the hundred of Amounderness, Lancashire, and who for a long time filled the office of consulting physician to the Preston and County of Lancashire Royal Infirmary. In 1878 the deceased gentleman was appointed a justice of the peace for the above-named borough and in that capacity distinguished himself for his impartiality as well as for his kindness and consideration in cases which called for the exercise of those qualities. Dr. Gilbertson was sixty-eight years of age at the time of his decease, and his departure from the scene of his useful labours is mourned by a large circle of attached friends.

THE citizens of Reading have suffered a grievous loss by the death of Dr. Moody-Ward, which took place on Thursday, the 9th inst. The deceased physician was born in Devonshire in 1857, received his early education at Torrington, and afterwards entered Exeter College, Oxford, where he graduated B.A., and subsequently took the M.B. degree. In the course of a year or two he was elected to the post of physician to the Royal Berkshire Hospital. The sense of the value of his services, medical and municipal, was strikingly displayed on the occasion of the funeral, when almost the whole of the more influential residents of the town followed the bier or collected around the grave.

DR. GUIDO BACCELLI, Professor of Clinical Medicine at the Sapienza, President of the Academica Medica di Roma, and chairman of the Central or Organising Committee of the Eleventh International Congress of Medicine and Surgery, will this week be entertained at a banquet in Rome by his colleagues in the parliamentary representation of the city and by a numerous body of his constituents. From his speech, which will, primarily, be of political interest, the professional world expects not a few references to the state of medical instruction in Rome and to its new seat, the Policlinico, in which, as our readers are aware, the International Congress is to hold its sittings.

THE Executive Committee of the Eleventh International Medical Congress, Rome, has decided, in its session of the 12th inst., that the Congress, which had been postponed by deliberation of Aug. 2nd, 1893, until April of the following year, shall take place from March 29th until April 5th, 1894. The Committee has been very glad to be able thus to satisfy the majority of those foreign colleagues who had been requested to give their opinion on this point. The Committee has already taken the necessary measures to secure convenient accommodation at usual prices for the visitors.

BY the direction of the Lord Mayor, the president and treasurer of the Metropolitan Hospital Sunday Fund, a meeting of the council will be held to-day (Friday, Nov. 24th) in order to determine the report to be presented to the constituents of the fund for the current year, to revise the list of the council for 1894, to order the convening of the next general meeting, and to consider what day shall be fixed for making the Hospital Sunday collection next year. Other business will also be brought before the members of the council on this occasion.

THE members of the Metropolitan Police Surgeons' Association will hold their annual dinner on Thursday, the 30th inst., at the Criterion, Jermyn-street.

MR. ARTHUR THOMSON, M.A., University Lecturer in Human Anatomy in the University of Oxford, has been appointed professor of that subject.

MILAN has added to her clinical resources a "Poliambulanza," or institution for the reception and treatment of every conceivable case requiring medical treatment. Comprising thirteen sections, and well supplied with every appurtenance and convenience known to modern therapeutics, the "Poliambulanza" is under the management of a "medico primario," Dr. Bertarelli, while next to him are Dr. Panzeri and Dr. Arcari, with a fully appointed clinical staff. It was declared open by the Queen of Italy on Saturday, the 18th inst.

LADY CLARK and family desire to return their grateful thanks for the great kindness and sympathy shown them during the illness, and since the death, of Sir Andrew Clark. The large number of inquiries, personal or by letters and telegrams, and the numerous gifts of wreaths and flowers render it quite impossible to thank each individually; but it is hoped by this intimation that all who have manifested their kindness will know how deeply it has been appreciated and what comfort and solace it has afforded.

AT the meeting of the members of the Royal Statistical Society on Tuesday last the Howard medal was awarded to Dr. Hugh R. Jones of Liverpool for the best essay on the Perils and Protection of Infant Life. The essay was illustrated by statistics, and the medal was accompanied by a purse of £20.

DR. PAOLO POSTEMSKI, Professor of Clinical Surgery in the University of Rome, has been nominated "Commendatore della Corona d'Italia," in recognition of his successful labours as President of the Organising Committee of the International Exhibition of the Red Cross, described in THE LANCET of Nov. 11th.

THE Bradshaw Lecture of the Royal College of Physicians of London will be delivered by Dr. W. S. Greenfield at the Examination Hall, The Savoy, W.C., on Thursday, Nov. 30th, at 5 o'clock. The subject of the lecture will be "Some Diseases of the Thyroid Gland."

ON Wednesday, Nov. 22nd, the Marquis of Bute was formally installed in the Rectorial chair in the university of St. Andrews, to which he was elected in November last year by the unanimous voice of the students.

THE opening of the new examination laboratories of the Institute of Chemistry will be inaugurated on Dec. 8th, 1893, by a luncheon to be held at the offices of the Institute, Bloomsbury-square, London.

MR. PATRICK HERON WATSON, M.D., LL.D. Edin., F.R.S. Edin., has been appointed Deputy-Lieutenant of the city and county of the city of Edinburgh and liberties thereof.

PLYMOUTH MEDICAL SOCIETY.—The annual general meeting of this Society was held on Wednesday, Nov. 15th, at the Duke of Cornwall Hotel, under the chairmanship of Mr. Leah of Stonehouse, retiring president. The following office-bearers were elected for 1893-94:—President: Mr. Connell Whipple. Vice-Presidents: Messrs. E. M. Russel Rendle (Plymouth), Leah (Stonehouse), and Thom (Devonport). Hon. Treasurer: Mr. J. Elliot Square. Hon. Librarian: Mr. C. E. Russel Rendle. Hon Secretary: Mr. Reginald H. Lucy. The annual dinner was held at the same date and place, twenty-seven members and two guests being present. The membership now numbers forty-seven.

THE LANCET

SPECIAL

ANALYTICAL SANITARY COMMISSION

ON

SMOKE PREVENTION AND PERFECT COMBUSTION.*

III.—GASEOUS FUEL, GAS-HEATING AND GAS-COOKING APPLIANCES.

IN previous articles we have explained the conditions necessary for the complete combustion of solid fuel or coal, and the conclusions to which our experimental investigations have led us may be briefly and opportunely recapitulated. We have shown that when bituminous coal is burned in the ordinary manner incomplete products are formed because heat is absorbed in effecting distillatory changes and the volatile and gaseous products of these changes are cooled down considerably below the point at which they combine with oxygen. In addition to this, the products are mixed with a large proportion of inert nitrogen derived from the absorption of oxygen from the air which served to maintain the combustion of the lower strata of fuel. Thus it is that smoke consisting of visible gases (tarry compounds) and invisible gases (carbon monoxide, sulphuretted hydrogen, hydro-carbons &c.) is formed and escapes unburnt into the air, representing a considerable waste of fuel and loss of heat. While, therefore, coal distils, and in doing so gives rise to complex products, coke or carbon is incapable of undergoing a similar change; for carbon, in burning, glows brightly and gives off the complete product of oxidation, carbonic acid, or if the oxygen is not in excess, then the incomplete product, carbon monoxide. This explains the steps in the combustion process taking place in the ordinary coal fire, where the coal on ignition gives off first inflammatory gases, part of which is burnt and part unburnt, and then when they cease to be evolved the residual coke or cinder glows without flame and burns without smoke. In other words, the red cheery appearance of a fire is due to the combustion of carbon (coke or cinders) and the luminous flames are due to the combustion of hydro-carbon gases. It is, therefore, the bituminous nature of coal or its property of yielding gases on heating which gives rise to considerable difficulties in effecting the perfect combustion of this form of fuel. These difficulties, however, great as they are, may be surmounted, as we have shown, when proper consideration is given to the conditions under which the perfect combustion of coal may be ensured, and by modifying the structure of the fireplace according to these requirements.

Of late years very considerable attention has been directed to the application of gas for heating purposes, the main argument in favour of gas fuel being that in burning it produces nothing but complete products of oxidation, as, unlike solid fuel, it must in the nature of things be constantly surrounded with a plentiful supply of oxygen, which supply can never be barricaded or interfered with by preliminary changes. The hope has been again and again expressed, therefore, that the universal adoption of gaseous fuel would prevent the formation of unhealthy and smoke-laden fogs. It is obvious that whatever remedy is at hand it must of necessity be drastic. Whether it be gas, coal, or even electricity—and considerable efforts are being made to render electricity available for both heating and cooking purposes—the outlay, expense, and trouble involved in the introduction of any new system must prove a temporary burden on the consumer. An important question to decide, therefore, is which of the systems of heat production at present available is most effectual, economic, or hygienic in its working, and which would be the most convenient to adopt for general employment. The latter is manifestly a question which can only be dealt with satisfactorily by Imperial legislative inquiry, while it is certainly beyond the province of an article of the present character. All we can undertake is to point out the advantages and disadvantages of the systems at hand, founding our conclusions on the results of careful experimental inquiry. Having proceeded so far in demonstrating how practicable a system is, and more particularly how effectual it is likely to prove in minimising the discomforts and alleviating the evils to health arising from the smoky outpourings of London's vast forest of chimneys, we may stop and leave the rest to those of our legislators whose duty and concern it is to watch over the health and well-being of the people. In the present article, therefore, we propose to record our experience with gas as fuel, both for heating and cooking purposes, and to publish the result of what really amounts to a scientific investigation in which the health question has been steadily kept in view, and which has absorbed much of our time and attention during the last twelve months.

THE COAL GAS INDUSTRY.

So long as the supply of coal is maintained it is certain that coal gas will be available as fuel. There is, therefore, no argument more in favour of the one or the other system that can be based on the question of supply; but, in view of the increased demand for gas for purposes other than illuminating, it is important to ascertain how far our producing centres are in a position to meet and cope with the enormously increased consumption of gas which its employment as fuel would entail. On the other hand, new methods of lighting may lessen the demand for lighting purposes, and to some extent, although we venture to think to a very slight extent, may balance the increasing needs of a supply for heating purposes. Judging from the steadily increasing employment of gas for both cooking and heating purposes which has taken place during the last decade, and bearing in mind, also, the fact of the great improvements that have been effected in the construction of gas fires and cookers, further improvements being almost a matter of daily occurrence, we are inclined to the opinion that, while there will be little diminution in the quantity of gas at present supplied for lighting, there will be a considerable quantity required over and above the present output for heating and cooking. It is important, therefore, to determine whether the gasworks of London would be equal to such an increased production of gas were this increase demanded. Information of this kind can only be satisfactorily obtained from an inspection of one of the large gas-manufacturing centres itself. By the courtesy of the Gaslight and Coke Company we were supplied with some interesting information on this point, and our Commissioners were permitted to visit their well-known works situated some eight miles from the metropolis, yet, nevertheless, the largest station supplying gas to London. There are no finer works in regard to site and construction than the Beckton Gasworks on the banks of the Thames, where there is accommodation for large steamers to come alongside the wharves to discharge coal and other materials and to receive coke and other products. A description of the works and a brief outline of the operations conducted therein will, it is felt, prove of interest in this connexion; but this

* Previous reports on this subject will be found in THE LANCET of March 21st, 1891, and March 5th, 1892.

description we may conveniently defer and append at the end of the article.

At Beckton the gas is not stored in large bulk, but it is pumped through two 48 in. mains supplying gas-holders in various parts of the metropolis. It is interesting to add that part of the gas manufactured in Beckton is conveyed to a district fourteen miles distant. The Gas Light and Coke Company "carbonise" no less than 2,000,000 tons of coal a year, of which 1,000,000 tons are carbonised at Beckton. This represents an average of about 6000 tons a day, equal to the production of 60,000,000 cubic feet of gas per diem, or 20,000,000,000 cubic feet per annum; and to distribute this enormous volume of gas there are laid down in London streets nearly 2000 miles of main, exclusive of services and of other companies' supply. Concerning statistics the following particulars, kindly placed at our disposal by the Gas Light and Coke Company's distributing engineer, furnish a striking and complete answer to the question as to whether the gas companies would be equal to the task of supplying an increased volume of gas were it demanded by the application of gas for heating and cooking purposes. On Tuesday, Dec. 1st, 1891, with the thermometer at 46° F., the consumption of gas was 82,000,000 cubic feet; on Thursday, the 17th, with the thermometer at 37°, the consumption was 92,000,000 cubic feet. Then suddenly a fog set in, and on Friday, the 18th, with the thermometer at 26°, no less than 118,000,000 cubic feet were required, and on the following Tuesday as much as 128,000,000 cubic feet (a record output)—that is to say, some 50,000,000 cubic feet of gas above the normal daily winter demand—an addition nearly equal to the daily average supply. If this enormous increase can be successfully grappled with at a single day's notice and maintained for several days (it is often only a few hours' notice, for there are no means of ascertaining the precise moment when fog appears, or when the temperature will suddenly fall), it is evident that even the existing plant, both manufacturing and distributing, is equal to the increasing requirements necessitated by the application of gas for purposes other than those of lighting. Moreover, by a system of high-pressure services extending over the company's area, the ordinary pressure supplied to the consumer being regulated from the high-pressure mains by means of governors, the supply is constantly maintained even when a largely increased volume is demanded.

Gas Firing.

Present types.—Mere sentiment frequently constitutes a powerful obstacle to the introduction of novel systems, and none the less is it so when the proposal is made to interfere with the time-honoured system of burning coal. The hearth, with its cheery, bright, incandescing fuel, will ever be associated with the comforts of the English home—an association so deeply rooted in the English mind as to render the substitution of invisible sources of heat quite out of the question. Hence the failure to introduce into this country the coke stove, the closed combustion stove used on the Continent and other places, and other appliances, which are effective enough as regards heat and fuel economy, as well as combustion, but whose dead, dull, cheerless blackness has operated decisively in preventing their adoption in English homes. With gas as fuel, however, any objection of this character cannot obtain, as, while perfect combustion is secured, the fire may be made to approach the glowing coal fire so closely in appearance as to deceive even the keen observer. This has been the aim, indeed, of the gas stove manufacturer, which, as we shall presently see, he has more or less successfully attained. In the present inquiry we have confined our attention to the gas fires, in the structure of which the atmospheric or Bunsen burner is an essential feature. Gas fires of this description afford either radiating heat, convective heat, or both. In some forms there is no fuel; the gas is simply burned and the heat of combustion carried away by the products and partly by heat currents of ascending air, and is thus directly utilised. But in by far the majority of stoves a form of indestructible fuel, as clay, asbestos, or iron, is maintained at a cheerful glow by the heat of the almost invisible Bunsen flame. It is well known, of course, that ordinary luminous flames could not be used for heating fuel, as the introduction of a cold body into a luminous flame results in a considerable deposition of soot. In the stoves tested there were three varieties of fuel used—clay-ball fuel (with certain modifications), asbestos fibre, and iron trellis. In stoves provided with a chamber at the back a current of air passes over the heated surfaces, becomes warmed, and then mixes with the air of the room; in other forms the heat is simply radiated from the glowing fuel. The installation of gas firing into a house, however, does not necessarily involve either a new stove or the removal of existing arrangements, as an ordinary fireplace can readily be filled with fuel and fitted with atmospheric burners. In the table on pages 30 and 31, embodying the experimental work carried out, a short description of each stove under test is given.

Explanation of Tabulated Results.

The quantity of gas consumed in a stove, unless it is fitted with governors or regulators, depends, of course, upon the pressure of gas from the main acting upon the burners. We have, therefore, tested the stoves both under maximum and minimum conditions, the former representing the full pressure of gas leaving the meter in a ¾-in. pipe, the pressure varying from 1·4 to 2·1 in., while in the latter case it was found that a safe working minimum was 0·4 in. By a safe minimum is meant the smallest quantity of gas that could be burned in a stove without fear of "lighting back" or blowing out (*vide* Bunsen Burner). The gas was measured through a Parkinson meter which had been previously tested, sealed, and stamped at the City of London Meter Testing Station. The numbers attached to the columns in the table make reference easy. We may describe them *seriatim*.

Column 1 gives a brief description of the kind of stove under test.

Column 2 records the consumption of gas in cubic feet in one hour, excepting in the case of the coal fire, where the number of pounds consumed in one hour is given.

Column 3 indicates the pressure of the supply and the pressure acting on the burner.

Column 4 gives in degrees Fahrenheit the mean heating effect on the air of the room in one hour. (It should be mentioned in this connexion that in order to make really comparative determinations the starting temperature was in all cases approximately the same, from 55° to 57°; and, moreover, the room being situated at the top of the building, so that the roof and two walls were exposed to the outside, there was no appreciable difference between the external and internal temperature. The experiments made with a view of ascertaining the heating effect of the stoves were not made in hot or extremely cold weather, but when the temperature in the morning was found to be within a degree of the starting point of preceding trials.) The space of the experimental room was 1080 cubic feet.

Column 5 gives the temperature registered by a thermometer placed twelve inches in front of the fire and immediately opposite the centre of the fuel. In one case, however (stove *P*), it is the heat of the ascending current of air.

Column 6 gives the cost of gas per hour, taking as an average price 3*s.* per 1000 cubic feet. In other calculations coal is taken to be worth 25*s.* a ton.

Column 7 shows the composition of the gases in the centre of the fuel. The results are of special interest as indicating the changes that go on during combustion.

Column 8 conveys the information at once whether combustion is complete, for the gases occurring in this column should consist of nothing but carbonic acid, nitrogen, and the external air induced to flow up the flue by convection.

Column 9 shows the proportion of air mixed with the gas before burning, a mixture effected by the injecting action of the gas issuing from a small jet into the Bunsen tube, which is open to the air at the bottom.

Column 10 is interesting in marking at once any defective action of the stove as exhibited by an undue increase of carbonic acid in the room. Considering that carbonic acid is the chief complete product of combustion, we may take the presence of this body to indicate the extent of contamination from other products (carbon monoxide, &c.). The results are expressed in parts per 10,000, the normal amount existing in air approximating to 4. It is essential to state that the doors and windows of the room were closed in the ordinary sense during the whole time of the experiment, but no precautions were taken to prevent the ingress of air through window and door crevices, so that the conditions were rather unfavourable to the stove and such that would not exactly obtain in the dwelling-room. Contamination arising from experimenter's breathing the air of the room was, as far as possible, avoided.

Column 11 is reserved for observations where they are justified.

The results yielded by the various gas fires under test may now be dealt with, and in so doing comparisons may be

drawn, defects pointed out, and improvements, where desirable, indicated.

Stove A.—A good average example of an efficient stove fitted with clay-ball fuel, warming the room satisfactorily by radiant heat only. No smell could be detected in the room, nor was there any indication of vitiation of the air on chemical examination. There were no incomplete products of combustion in the flue.

Stove B.—A similar stove to *A*, but consuming some 6 ft. more gas per hour, the cost showing a slightly corresponding increase, which, however, is compensated for by greater heating effect in the room. The increase of carbonic acid was inappreciable, while the composition of the gases in the flue was satisfactory. It is to be noted, also, that the burner of this stove produces a gaseous mixture in which the proportion of gas to air is greater.

Stove C.—A good, economical, radiating stove; combustion products satisfactory. There was, however, distinct but not important increase of carbonic acid in the air, arising probably from the fuel obstructing the flames.

Stove D.—This stove heats the room both by convection and radiation and is therefore very economical as regards heating effect, 40 ft. of gas raising the temperature nine degrees while at minimum working—that is, for 16½ ft. consumed the air was warmed four degrees. The carbonic acid in the air after one hour's working was practically nil, and the proportion of gas to air effected by the burner was satisfactory.

Stove E.—Similar to *D*; a radiating and heat current-producing stove. Heating effect, therefore, high, consumption being 44 ft. (4 ft. more per hour than *D*), while air and gas were in suitable proportion, but the carbonic acid in the air, though insignificant, was higher. The products of combustion in the flue were complete.

Stove F.—This stove under full pressure of gas performs a somewhat extravagant consumption, which is not balanced by a corresponding heating effect. The flames were very long and occasionally protruded in front of the dome at the top of the stove, an occurrence which accounts for the distinct though small increase of carbonic acid in the air. The stove gives better results accordingly when worked at minimum pressure.

Stove G.—A stove fitted with iron trellis, giving feeble radiant heat, but the heating effect arising from warmed air was satisfactory. There was little increase of carbonic acid in the air after one hour's working of the stove. The flames were but slightly impeded, owing to the nature of the fuel. There was absolutely no increase of carbonic acid at minimum working. It works economically also as regards heating effect when the supply of gas is properly regulated.

Stove H.—Another type of stove with iron trellis, heated by atmospheric burners. As regards the amount of gas consumed the stove is very economical in relation to the degree of heat produced in the room, although a slight increase in carbonic acid points to some small defect, such as interference to the passage of the flame, which, however, is remedied when the pressure is reduced. The radiated heat is feeble, the heat being derived chiefly by means of a warm current of air passing through a chamber at the back.

Stove I.—Heat from this stove mainly radiated from glowing clay-ball fuel. Moderately economical; combustion products perfect; small effect on air; proportion of gas to air satisfactory.

Stove K.—This stove is provided with four separate burners, an arrangement which offers a very distinct advantage of regulating the heat almost to a degree. It produces a very satisfactory degree of temperature in the room, derived exclusively from heat radiated from glowing clay-ball fuel, while its effect upon the air leaves little to be desired. A glance at the table will show that it is economical and that the products of combustion are complete. The rate of consumption in this stove can be reduced to 12 cubic feet per hour, the amount consumed by one burner, the heating effect of which is three degrees.

Stove L.—This is a similar stove to *K*, but larger and fitted with six burners, and provided with a heating chamber. For the amount of gas it consumes an excellent heating effect is obtained. The carbonic acid is slightly increased, arising from the fuel offering an undue obstruction to the flame. The stove may be reduced to one burner, burning 7½ cubic feet per hour, costing one farthing, and producing 2½° increase in temperature.

Stove M.—This is a metal fuel stove similar to *G* or *H*, but having no chamber; the heat produced in the room is therefore entirely radiant. Its heating effect is very great, considering the quantity of the gas consumed; but through some cause, as with stove *H*, there is a distinct increase of carbonic acid in the air after an hour's working. It is satisfactory, however, in all respects when attention is paid to the regulation of the supply. (*Vide* Minimum Working.)

Stove N.—In this stove the Bunsen flame plays upon asbestos fibre; there is, therefore, but small impediment to the flame, and the carbonic acid in the air shows little increase. From the nature of the fuel considerable heat is lost by travelling up the chimney, the radiating effect comparing very unfavourably with clay-ball fuel. Thus for 39 ft. consumed 5° is the effect. The products of combustion were complete.

Stove O.—Stove fitted with asbestos fibre of the same type as M, producing similar results, but showing a distinct improvement as regards leakage of carbonic acid in the air. It gives very satisfactory results at minimum working.

Stove P.—This stove produces the best results as regards heating effect, but the chief product of combustion, carbonic acid, is wholly discharged into the air. Thus the carbonic acid is raised from 5·2 to 8 parts per 10,000 in one hour, while for the small consumption of 16 cubic feet the room is heated through no less than 10°. The stove, in fact, is of the condenser type, in which the products of combustion pass through a length of tubes in which the moisture formed condenses, carrying with it the products of the oxidation of sulphur. A tray is provided at the foot of the stove to catch this water, which on analysis is found to contain the sulphur in the form of sulphuric acid, with some ammonia present as sulphate. The stove is especially applicable in cases where a flue is inconvenient or impossible. Whilst of course the carbonic acid resulting from the combustion of the hydrocarbons of coal gas tends to vitiate the air, we cannot fail to approve of the ingenious device by which practically the deleterious sulphur products are removed. Although efficient for heating rooms, it cannot claim to present a cheerful appearance, a drawback to which we have already alluded, but some attempt has been made to remove this objection by the adoption of a luminous burner and placing in front of the flame a red-glass window. The stove we tested, however, was fitted with an atmospheric burner.

Stove R (coal fire).—In this experiment coals were burned in a grate, immediately in front of which the stoves just described were tested. It may be urged that the comparison of its heating effect is hardly a fair one, because the coals were burning immediately under the chimney, while in the gas stove the fire was situated some eight inches towards the front; but on reflection it will appear that these conditions were, after all, such as would obtain in actual practice. Coals must be burnt immediately under a flue, but a gas stove may project a short distance into the room. There is thus a gain derived from the fact that in the combustion of coal a large proportion of the heat is lost up the chimney. Where, however, a gas fire is fitted to an ordinary fire-grate the same loss, it will be urged, will take place. As a matter of fact this need not be so, because the log fuel that is frequently used may be so built up that a maximum yield of radiant heat is effected and a comparatively small proportion escapes up the flue. Moreover, with gas there is no loss of heat through incomplete combustion, and consequently no production of smoke. In the experiment recorded in the table 2½ lb. of coal were consumed in an hour, and the effect on the air of the room was the raising of the temperature equal to 5°—a very satisfactory result, considering the cost of the fuel, which, at the rate of 25*s.* per ton, would be only 0·3*d.* Now a glance at the heating effect of a few of the gas fires will show that the same result was produced for 1·4*d.* (equals 40 cubic feet of gas), which is approximately five times the amount for coal, or, oddly enough, in exact ratio of the thermal value as compared with gas. But the stoves mentioned do not give a maximum heating result, for reasons already put forward, the bulk giving twice the degree of temperature (from 10° to 12°) for the same outlay—1·4*d.* On this basis, therefore, we may regard the practical heating value of gas, calculated on the prices quoted, as equal to two-fifths that of coal. It is interesting to notice that in dealing with the products of combustion of the coal fire carbon monoxide does not occur in the fuel but in the gases in the chimney. That is the exact reverse of the case where gas as fuel is concerned. Probably, therefore, the carbonic acid found in the fuel gases is reduced as it comes into contact with the upper layers of red-hot fuel, forming carbon monoxide in accordance with the equation $CO_2 + C = 2CO$.

In addition to carbon monoxide in the gases proceeding up the chimney there were also tarry matters and a considerable proportion of hydrogen.

Relative heat value of coal and gas.—We may now discuss the character and composition of coal gas, and it would be instructive to compare it with the composition of the coal from which it is obtained. We shall thus gain considerable information bearing on the comparative calorific value of these fuels. Coal gas drawn from the supply pipes in THE LANCET Laboratory (Gas Light and Coke Company's supply) has the following percentage composition according to our analysis:

	By volume.	By weight.
Benzene (C_6H_6)	0·55	3·98
Olefines (C_2H_4)	4·45	11·76
Carbon monoxide (CO)	7·80	20·00
Hydrogen (H)	52·90	9·84
Methane (CH_4)	31·80	48·00
Nitrogen (N)	2·50	6·42

An average sample of coal gives the following figures:—

Carbon (C)	82·12 per cent.
Hydrogen (H)	5·31 ,,
Nitrogen (N)	1·35 ,,
Sulphur (S)	1·24 ,,
Oxygen (O)	5·69 ,,
Ash...	4·29 ,,

It will at once be seen that, whereas in coal the carbon is the chief constituent, in coal gas it is replaced largely by hydrogen, the carbon being left behind in the retort as coke. Hydrogen, methane, and carbon monoxide are the chief constituents of calorific value in coal gas. Methane is closely related to hydrogen and is characterised by similar properties. While the calorific value of carbon is 8080 units, that of hydrogen is 34,500 units, or more than four times as great. There is, therefore, a distinct calorific gain in this respect; but to make a fair contrast between the calorific value of gas and coal we must compare the thermal value of a given quality of coal with the gas yielded by that quantity. For that purpose we cannot do better than place side by side the heat value of a ton of coal and the heat value of 10,000 cubic feet of gas, which is the average amount a ton yields. It is as well to explain first that the heat unit is taken to be the amount in grammes of water raised one degree Centigrade by one gramme of the substance. On this basis the thermal values of a ton of coal and the gas it is capable of producing, both of the composition indicated above, are as follows:—

Coal, one ton	= 8,353,846,640 heat units.
Gas, 10,000 cubic feet	= 1,635,000,000 ,,

The gas produced, therefore, represents approximately one-fifth of the calculated heat value of the ton of coal from which it is derived, so that if the ton of coal be worth 25*s.* the gas, as regards the heat value, will be worth 5*s.*, or 6*d.* per 1000 feet. The difference represents the energy of the residual coke, the tar, and the heat spent in converting part of the coal into gas. The calculation is valuable in indicating one thing—namely, that the calorific value of coal gas is a fifth of coal, or equal to 4 cwt. of the coal from which it is obtained, supposing that the total energy of the coal is made available; but this is too strong a supposition. Coal is far from completely burnt in probably 999 out of 1000 fires; a large proportion of its heat value is lost in the shape of incomplete products, inflammable gases, soot, and so on; on the other hand, gas admits of complete combustion under easy circumstances, and its total calorific value is therefore utilised. In other words, while gas does its duty fully, coal, as commonly consumed, fails largely in this respect. Here is an important point, and one on which the whole question in relation to its bearing on the fog difficulty rests. In burning coal in the ordinary way we not only lose a notable proportion of fuel, and thereby heat in the shape of tarry products, soot, and unoxidised gases, but in so doing the air is charged with just those bodies which give to the particles of moisture in ordinary mist the detestable and injurious character of the notoriously peasoup-coloured London fog. With gas as fuel, which in some measure represents these products, there is very small possibility of such undesirable products ever being formed, while an important economy as regards heating effect is at the same time secured.

It must be remembered that gas at the present time is ostensibly supplied for lighting purposes, and the maintenance of a definite illuminating power and a certain degree of purity contributes largely towards its expense. Gas suitable for heating purposes could be supplied doubtless at a very much cheaper rate, and then its cost as fuel compared with coal would sink into insignificance. It has been suggested, indeed, that if London were supplied with a non-illuminating gas, say at half the rate at present charged for illuminating gas, then there would be a clear and open way out of the difficulty as regards heat efficiency, combustion, and fuel economy. In that case either a device for rendering the gas luminous at the point of burning when an ordinary burner is used by means of naphthalene or some known carburetting compound, or else the universal employment of the incandescent burner would meet the requirements of such a novel installation. Gas engineers, however, express doubt as to the practicability of such a system. It would certainly have many drawbacks. In the present incandescent system, for example, the use of glass chimneys constitutes a source of inconvenience and trouble, while with carburetting contrivances periodical changing and constant inspection would be inevitable. Nevertheless, the incandescent burner, with recent improvements, is rapidly growing in favour, and we feel confident that this form of burner promises to play a very important part in the future. In any case, it is certain that there is still plenty of room for improvement in the methods of using gas as an illuminating agent. It is well to bear in mind, however, that if a cheaper gas were produced it would be certain to consist largely of water or producer gas, 50 per cent. of which practically consists of carbon monoxide, a deadly and an odourless gas. On the other hand, such a gas would be equally suitable for heating purposes. Again, any modification of the present system of gas-producing would seriously affect, if it did not stop altogether, the yield of valuable by-products, and, as we shall show, this is a matter of considerable importance.

CONSIDERATION OF THE RESULTS.

Combustion.—From a knowledge of the composition of the fuel burnt we can easily ascertain what should be the composition of the products of its complete combustion. Thus, according to the analysis of coal gas given above, it contains hydro-carbons, hydrogen, and a trifling amount of sulphur and nitrogen. The products of complete oxidation of coal gas should be, therefore, chiefly steam and carbonic acid, with traces of sulphurous and sulphuric acids and nitrogen; but in the flue these products are necessarily largely diluted with atmospheric air, a current of which is induced to flow up the chimney by the heat of the fire. We should expect to find, therefore, on analysis of the gases in the chimney, carbonic acid, a large excess of nitrogen, partly derived from the air, that has yielded up its oxygen to the fuel, partly from air, introduced by convection, and partly, but to a very small extent, from the nitrogen originally present in the gas. The hydrogen, of course, turns to water, which condenses to liquid. If, on the other hand, combustion were incomplete other products, such as carbon monoxide and hydrogen, would be found. As a matter of fact, in no single instance of a gas fire could incomplete or imperfect products of combustion be found in the gases going up the chimney. In other words, the permanent gases from the flue consisted wholly of carbonic acid, nitrogen, and oxygen (*vide* Column 8). This cannot be said of the products of combustion of coal when it is burnt in an ordinary fireplace. In this case we see at once from the analyses of the gases that valuable heat-producing materials, in the shape of hydro-carbons, carbon monoxide, and a large proportion of hydrogen and tarry compounds, escape into the chimney, eventually contaminating the air. It should be remembered also that in the fuel thus lost occur the tarry by-products already referred to, which are recovered at the gas-works, yielding, when suitably treated, an abundance of valuable bodies. Hence has arisen the proposal to leave the distillation of coal (for that, after all, is really what takes place in the ordinary grate) to the gas maker, so that he may not only recover the valuable and volatile by-products and obviate waste, but also supply a fuel which, without trouble or difficulty, burns without smoke and evolves no products prejudicial to health. However perfect the combustion of coal gas may be, there is one element in it which gives rise to a product on burning which demands serious attention. We refer to the sulphur in coal gas. Sulphur itself in burning gives sulphurous acid, but in the form in which it occurs in coal gas it burns nearly completely into sulphuric acid and not into sulphurous acid, as generally supposed, or, at any rate, the quantity of the latter compound compared with the former is very slight. This is proved in the above experiments, but the following

TABULATED RESULTS OF EXPERIMENTS WITH VARIOUS GAS-HEATING STOVES.

MAXIMUM CONSUMPTION.

1. Stove under test.	2. Cubic ft. of gas consumed per hour.	3. Gas pressure in inches of water. Meter.	3. Burner.	4. Mean heating effect in room in 1 hr. (deg. F.)	5. Max. temp. 1 ft. in front of fire (deg. F.).	6. Cost per hour.	7. Composition of gases from glowing fuel (per cent.).	8. Composition of gases from chimney (per cent.).	9. Composition of gases issuing from burners (per cent.).	10. Effect on air of room judged from increase of CO_2. Parts per 10,000. CO_2 Before.	CO_2 After.	CO_2 Increase.	11. Observations.
A. Clay-ball fuel; radiating stove.	1·46	1·3	1·4	6°	160°	1·32d.	O = None CO_2 = 6·6 CO = 7·2 HC = 0·3 H = 7·6 N = 78·3	O = 16·2 CO_2 = 2·4 — — — N = 81·4	Air = 70 Coal gas = 30	5·2	6·8	1·6	Radiant heat only.
B. Clay-ball fuel; radiating stove.	1·51	1·7	1·5	8·5°	152°	1·37d.	O = None CO_2 = 5·9 CO = 6·3 HC = 0·3 H = 7·0 N = 80·5	O = 16·0 CO_2 = 1·7 — — — N = 82·3	Air = 65·4 Gas = 34·6	5·1	6·85	1·75	Radiant heat only.
C. Clay fuel; radiating stove.	1·59	1·9	1·6	9·5°	145°	1·80d.	O = None CO_2 = 5·0 CO = 8·0 HC = 0·3 H = 5·4 N = 81·3	O = 15·0 CO_2 = 2·4 — — — N = 82·6	Air = 66·5 Gas = 33·5	6·2	8·4	2·2	Radiant heat only.
D. Asbestos fibre with heating chamber.	1·40	2·0	1·7	9°	123°	1·44d.	O = None CO_2 = 7·3 CO = 1·0 HC = None H = 2·0 N = 86·1	O = 14·0 CO_2 = 4·2 — — — N = 81·8	Air = 71·0 Gas = 29·0	4·0	4·62	0·62	Radiant heat and heat conveyed by current of warmed air.
E. Clay fuel with heating chamber.	1·44	1·9	1·6	10°	175°	1·58d.	O = None CO_2 = 3·5 CO = 10·3 HC = 0·5 H = 10·2 N = 75·5	O = 10·6 CO_2 = 3·0 — — — N = 82·2	Air = 70·0 Gas = 30·0	5·3	7·0	1·7	Radiant heat and heat conveyed by current of warmed air.
F. Clay-ball fuel with heating chamber.	1·69	1·9	1·6	9°	180°	2·16d.	O = None CO_2 = 5·3 CO = 1·3 HC = None H = 1·7 N = 88·7	O = 6·0 CO_2 = 6·6 — — — N = 82·8	Air = 70·0 Gas = 30·0	4·50	6·50	2·0	Radiant heat and heat conveyed by current of warmed air.
G. Iron trellis with heating chamber.	1·50	2·0	1·3	9°	165°	1·80d.	O = None CO_2 = 8·0 CO = 5·0 HC = None H = 2·4 N = 80·6	O = 6·0 CO_2 = 7·5 — — — N = 86·5	Air = 70·0 Gas = 30·0	4·0	5·15	1·15	Radiant heat and heat conveyed by current of warmed air.
H. Iron trellis with heating chamber.	1·38	1·7	1·4	8°	138°	1·26d.	O = None CO_2 = 9·3 CO = 2·0 HC = None H = 1·6 N = 87·1	O = 4·4 CO_2 = 7·0 — — — N = 88·6	Air = 71·0 Gas = 29·0	5·3	7·4	2·1	Radiant heat and heat conveyed by current of warmed air.
I. Clay-ball fuel with heating chamber.	1·53	1·7	1·4	9°	160°	1·20d.	O = None CO_2 = 6·5 CO = 4·3 HC = 0·3 H = 4·7 N = 84·2	O = 14·2 CO_2 = 3·3 — — — N = 84·5	Air = 70·5 Gas = 29·5	4·0	5·4	1·4	Radiant heat and heat conveyed by current of warmed air.
K. Clay-ball fuel; radiating stove; 4 burners with taps.	1·43	2·1	1·9	8°	150°	1·54d.	O = None CO_2 = 5·0 CO = 10·6 HC = 0·5 H = 10·8 N = 73·1	O = 12·4 CO_2 = 4·0 — — — N = 83·6	Air = 63·0 Gas = 37·0	4·0	4·34	0·34	Radiant heat only.
L. Clay-ball fuel; radiating stove with heating chamber; 6 burners with taps.	1·50	2·1	1·8	11°	180°	1·80d.	O = None CO_2 = 6·6 CO = 9·8 HC = 1·3 H = 7·2 N = 76·3	O = 16·2 CO_2 = 1·8 — — — N = 82·0	Air = 64·0 Gas = 36·0	4·2	5·75	1·55	Radiant heat and heat by convection.
M. Iron trellis with heating chamber.	1·40	2·1	1·9	12°	170°	1·44d.	O = None CO_2 = 6·6 CO = 6·0 HC = 0·2 H = 7·2 N = 80·0	O = 6·6 CO_2 = 7·4 — — — N = 86·0	Air = 75·0 Gas = 25·0	4·55	6·80	2·25	Radiant heat and heat conveyed by current of warmed air.
N. Asbestos fibre; radiating stove.	1·39	1·9	1·8	8°	132°	1·40d.	O = None CO_2 = 4·8 CO = 9·3 HC = None H = 6·3 N = 79·7	O = 15·6 CO_2 = 2·4 — — — N = 82·0	Air = 70·0 Gas = 30·0	4·9	6·0	1·10	Radiant heat only.
O. Asbestos fibre; radiating stove.	1·40	1·9	1·8	8°	125°	1·44d.	O = None CO_2 = 8·0 CO = 1·2 HC = None H = 2·2 N = 86·2	O = 13·6 CO_2 = 4·0 — — — N = 82·4	Air = 73·0 Gas = 27·0	5·3	5·8	0·5	Radiant heat only.
P. Condenser stove; atmospheric ring burner.	1·6	2·3	2·1	10°	152°	0·37d.	—	O = 5·0 CO_2 = 7·3 N = 87·7	—	5·2	8·0	2·8	Condensed fluid from four hours' burning measured 7½ oz. and contained 0·0042 S and 0·17% SO_3.
R. Coal fire.	2½lb. per hr.	—	—	5°	145°	0·31d.	O = None CO_2 = 15·8 CO = None H = 4·0 H = 10·0 N = 70·2	O = None CO_2 = 10·3 HC = 0·3 CO = 0·7 H = 11·0 N = 77·7	—	6·1	7·1	1·0	Radiant heat only.

* Temperature of ascending current.

Note.—HC indicates unsaturated hydrocarbons.

TABULATED RESULTS OF EXPERIMENTS WITH VARIOUS GAS-HEATING STOVES—*Continued.*

MINIMUM CONSUMPTION.

1. Stove under test.	2. Cubic ft. of gas consumed per hour.	3. Gas pressure in inches of water. Meter.	3. Gas pressure in inches of water. Burner.	4. Mean heating effect in room in 1 hr. (deg. F.)	5. Max. temp. 1 ft. in front of fire (deg. F.).	6. Cost per hour.	7. Composition of gases from glowing fuel (per cent.).	8. Composition of gases from chimney (per cent.).	9. Composition of gases issuing from burners (per cent.).	10. Effect on air of room judged from increase of CO_2. Parts per 10,000. CO_2 Before.	10. CO_2 After.	10. CO_2 Increase.	11. Observations.
A. Clay-ball fuel; radiating stove.	25	2·1	0·4	4°	104°	0·9*d.*	O = 4·93 CO_2 = 8·39 CO = None HC = — H = — N = 86·68	O = 17·06 CO_2 = 1·09 — = — — = — — = — N = 81·85	Air = 70·0 Gas = 30·0	4·7	4·9	0·2	Radiant heat only.
B. Clay-ball fuel; radiating stove.	24	2·1	0·4	4°	101°	0·88*d.*	O = 3·0 CO_2 = 9·0 CO = None HC = ,, H = ,, N = 88·0	O = 15·0 CO_2 = 0·9 — = — — = — — = — N = 84·1	Air = 60·0 Gas = 40·0	4·5	4·75	0·25	Radiant heat only.
C. Clay fuel; radiating stove.	25	1·9	0·4	5°	120°	0·90*d.*	O = 8·0 CO_2 = 6·5 CO = None HC = ,, H = ,, N = 85·5	O = 17·9 CO_2 = 1·3 — = — — = — — = — N = 80·8	Air = 65·0 Gas = 35·0	4·1	4·2	0·1	Radiant heat only.
D. Asbestos fibre with heating chamber.	16	2·2	0·4	4°	100°	0·57*d.*	O = 2·2 CO_2 = 9·4 CO = 0·5 HC = None H = ,, N = 87·9	O = 14·6 CO_2 = 1·8 — = — — = — — = — N = 83·6	Air = 71·0 Gas = 29·0	4·0	4·0	Nil.	Radiant heat and heat by convection.
E. Clay fuel with heating chamber.	21	1·9	0·4	5°	120°	0·75*d.*	O = None CO_2 = 9·8 CO = 2·0 HC = None H = 1·9 N = 87·2	O = 6·6 CO_2 = 7·2 — = — — = — — = — N = 86·2	Air = 70·0 Gas = 30·0	5·0	5·3	0·3	Radiant heat and heat by convection.
F. Clay-ball fuel with heating chamber.	22	3·1	0·4	5°	120°	0·79*d.*	O = None CO_2 = 7·3 CO = 4·3 HC = None H = 3·9 N = 84·5	O = 7·0 CO_2 = 6·8 — = — — = — — = — N = 86·2	Air = 70·0 Gas = 30·0	4·3	4·4	0·1	Radiant heat and heat by convection.
G. Iron trellis with heating chamber.	20	2·1	0·4	5°	112°	0·72*d.*	O = None CO_2 = 8·5 CO = 0·5 HC = None H = 3·0 N = 88·0	O = 8·6 CO_2 = 4·2 — = — — = — — = — N = 87·2	Air = 71·0 Gas = 29·0	4·0	4·	Nil.	Radiant heat and heat by convection.
H. Iron trellis with heating chamber.	20	2·3	0·4	5°	102°	0·72*d.*	O = 0·2 CO_2 = 9·6 CO = 0·2 HC = None H = 1·4 N = 88·6	O = 8·7 CO_2 = 3·8 — = — — = — — = — N = 87·5	Air = 70·0 Gas = 30·0	4·1	4·2	0·1	Radiant heat and heat by convection.
I. Clay-ball fuel with heating chamber.	26	2·0	0·4	4°	93°	0·93*d.*	O = None CO_2 = 9·4 CO = 3·2 HC = None H = 0·9 N = 86·5	O = 15·2 CO_2 = 2·0 — = — — = — — = — N = 82·8	Air = 68·5 Gas = 31·5	4·5	4·7	0·2	Radiant heat and heat by convection.
K. Clay-ball fuel; radiating stove; 4 burners with taps.	12	2·1	2·0	3°	84°	0·43*d.*	—	—	Air = 63·0 Gas = 37·0	3·95	4·0	0·05	One burner only alight; radiant heat only.
L. Clay-ball fuel; radiating stove with heating chamber; 6 burners with taps.	7	2·2	2·2	2·5°	70°	0·25*d.*	—	—	Air = 64·0 Gas = 36·0	3·99	4·0	0·01	One burner only alight; radiant heat and heat by convection.
M. Iron trellis with heating chamber.	20	2·1	0·4	5°	120°	0·72*d.*	O = None CO_2 = 6·0 CO = 9·4 HC = 0·3 H = 7·5 N = 76·8	O = 14·8 CO_2 = 3·2 — = — — = — — = — N = 82·0	Air = 70·0 Gas = 30·0	4·24	4·25	0·01	Radiant heat and heat by convection.
N. Asbestos fibre; radiating stove.	18	1·9	0·4	2°	110°	0·64*d.*	O = None CO_2 = 5·2 CO = 9·4 HC = None H = 5·6 N = 79·8	O = 15·0 CO_2 = 2·8 — = — — = — — = — N = 82·2	Air = 70·0 Gas = 30·0	4·4	4·9	0·5	Radiant heat only.
O. Asbestos fibre; radiating stove.	20	2·1	0·4	3°	90°	0·72*d.*	O = 7·7 CO_2 = 4·3 CO = 3·4 HC = None H = 9·2 N = 75·4	O = 15·4 CO_2 = 2·8 — = — — = — — = — N = 81·8	Air = 73·0 Gas = 27·0	5·0	5·3	0·3	Radiant heat only.
P. Condenser stove; atmospheric ring burner.	6·2	2·2	0·4	2°	—	0·22*d.*	—	O = 15·5 CO_2 = 2·6 N = 81·9	—	5·0	5·8	0·8	Heating effect chiefly by convection and the heat of combustion products.
R. Coal fire.	—	—	—	—	—	—	—	—	—	—	—	—	—

Note.—HC indicates unsaturated hydrocarbons.

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simple test may be quoted as conclusive. When water is boiled in a glass flask over a Bunsen burner a strongly acid liquid may be washed off the bottom of the flask after some time, which will be found to char paper and to give all the reaction of sulphuric acid. Doubtless this in some measure accounts for the destructive action of gas in burning on the various articles (brass-work, ceiling, plants) of the dwelling-room. In the products of combustion of coal gas, then, there occur sulphuric acid and probably sulphurous acid. As mentioned later, the Legislature requires the gas to be purified down to within 20 grains per 100 cubic feet, and the gas supplied by the Gas Light and Coke Company is reduced to twelve grains below this limit—that is to say, to eight grains. Satisfactory as this is, it would be better if the sulphur could be completely removed in view of the effect of its combustion products on vegetation, and probably, therefore, on animal life; but no known purifying process can reduce the sulphur to less than 8 grains per 100 cubic feet, which is the degree of purification effected in actual practice. We dwell, and lay some emphasis, on this subject because the experiments of Professor Thistleton Dyer at Kew have shown conclusively that the deleterious effects of fog on plants are due to the toxic influence of small proportions of sulphurous acid. Professor Oliver of the Horticultural Society also attributes the action to sulphurous acid, and in experiments he has made in which an atmosphere containing a surprisingly minute quantity of sulphurous acid was employed, the changes in the tissue of the plant were observed with the microscope to be the same as those produced by fog.[1] We are, therefore, led to repeat that it would be a distinct advantage if gas could be completely freed from sulphur compounds; not that sulphurous acid or sulphuric acid conduces to fog formation—for there is no evidence that they do—but because there is reason for objection on other grounds to even small traces of sulphurous acid in the atmosphere. Let it be observed, however, that by far the greater proportion of the sulphur of coal is left behind in the coke in the retorts; nearly all the remainder, in the shape of volatile sulphur compounds, is eliminated in the processes of purification. The use of gas fuel would therefore minimise the evolution of sulphur compounds in the air. Moreover, when the combustion of coal is imperfect, the poisonous gas sulphuretted hydrogen (H_2S) is produced. On the other hand, if, as is rarely the case, it is complete, then practically the whole of the sulphur would be given off in the form of sulphurous and sulphuric acids (SO_2 and SO_3). In the next place the results furnished on an analysis of the gases drawn from the glowing fuel (Column 7) is of special importance, since not only is a knowledge gained of the steps in the combustion process, but the revealed composition of these gases accounts in a very interesting manner for certain deleterious effects which are known to be produced by some gas stoves under certain conditions of working, in which case, be it remarked, it generally happens that the defect is due to a want of application of common intelligence as to the requirements of a fire, be it coal or gas. Referring once more to the composition of coal gas, we find that the fuel constituents consist practically of hydrogen, methane, and carbon monoxide, and that when the coal gas is admitted into the atmospheric burner it is mixed with air in the majority of cases in the proportion of 1 volume of gas to 2 3 volumes of air. Now 1 volume of gas for complete combustion requires 8½ volumes of air, so that the air admitted with the gas into the burner is quite inadequate to effect complete combustion. The chief combustion constituents of the gases from the centre of the glowing fuel prove to be hydrogen and carbon monoxide, the latter often in greater proportion (10 per cent.) than it is ever found in the gas itself before burning. This may be due to one of two things: either that the saturated hydro-carbons and the greater part of the hydrogen burning first naturally raise the proportion of carbon monoxide, or that carbon monoxide is formed from incomplete combustion of the hydro-carbons. Whichever is the explanation, the fact remains that the gas which is present in the fuel contains traces of unsaturated hydro-carbons and a large proportion of carbon monoxide. From a hygienic point of view this is of the utmost concern, since if the working conditions of the stove are disturbed—as, for example, by a down draught—it is extremely probable that amongst other products the deadly gas carbon monoxide would find its way into the room. Unfortunately, the presence of this poisonous gas in the air is not evident to the nose or eyes, as the objectionable gas acetylene or the smoke of a faulty fire would be; but as it is usually accompanied by other products which possess a characteristic smell its presence may usually be detected without difficulty. That carbon monoxide is the last gas to burn is also evident from the lambent blue appearance of the flames above the clay fuel; but we imagine that no one would ever be likely to say that a gas stove would burn satisfactorily in the same setting where a coal fire has produced unpleasant results. In view of the large amount of ignorance exhibited on this point we must strongly insist, and it may be taken as an axiom, that if a gas fire is expected to give satisfactory and especially salutary results it should have precisely the same provisions made for its favourable working as are required for the satisfactory working of a coal fire. It is further a popular and a serious mistake to suppose that a gas fire will remedy a faulty chimney, but a draughty chimney may in most cases be remedied by reducing its capacity by means of an iron pipe which affords ample outlet for the products of a gas stove. For the purpose of the present experiment the flue of the gas fires conveyed the products of combustion directly into an ordinary chimney. The fires were thus working under conditions which it is absolutely essential should be observed, and accordingly most minute tests failed to find any deleterious products in the air of the room, in spite of the fact that no special precautions were taken to ensure ventilation. As an example of the kind of testing performed in this direction blood itself was taken for the purpose, through which the air of the room was aspirated during the whole time the experiment lasted. In no instance was carboxyhæmoglobin (COHb) detected, while it was rarely detected even in the flue gases, but invariably in the gases drawn from the fuel. The risk of contaminating the atmosphere with carbon monoxide is minimised when the stove is worked at low pressure; the flames being shorter, they are not impeded or spread out by the fuel, and complete products are therefore formed before the gases leave the fuel area. It will be noticed, again, that the proportion of carbon monoxide is considerably reduced in those stoves where asbestos fibre or iron trellis is used as the heating agent. The interference or choking of the flame by the fuel being closely packed upon the burner would appear, therefore, to have some share in preventing the burning of carbon monoxide. As has already been stated, however, complete products of combustion were invariably found in the chimney.

Burners.—The stoves examined were all fitted with the Bunsen or atmospheric burner. These were selected for investigation because the Bunsen burner gives greater heat and the products of combustion are more satisfactory. Moreover, Bunsen burners can only be used for heating fuel, since luminous flames deposit carbon. Luminous flames, therefore, are only applicable to stoves without fuel, and consequently to those patterns which, when working, present the appearance of an ordinary coal fire. In the Bunsen or atmospheric burner the gas merges from a central nozzle, and, passing unburnt up the burner tube, draws air with it by injection action through an opening provided near the inlet. The mixture of air and gas, which, according to our experiments, varies from 63 per cent. of air with 37 per cent. of gas to 71 per cent. of air with 29 per cent. of gas, can be lighted at the top of the tube, where it burns with a faint blue perfectly smokeless flame. It may be assumed that the air so introduced enables the carbon which is concerned in rendering the flame luminous to burn at once. Comparatively recent observations have shown, however, that this explanation is incomplete, if not incorrect, for if instead of mixing air with the gas inert gases, such as nitrogen or carbonic acid, be employed the flame similarly becomes non-luminous. Professor Vivian Lewis, who has devoted a great deal of attention to the subject of flame, maintains that luminosity is due to the formation at from 1000° C. to 1200° C. of acetylene from the original hydro-carbons, but that the moment the temperature is reached by the combustion of the hydrogen and carbon monoxide the acetylene formed decomposes, with a further rise of the temperature, and the carbon heated to incandescence radiates heat and light. On this theory the following is the probable explanation of the chemistry of the non-luminous or Bunsen flame. The nitrogen of the air acts in the normal Bunsen flame by so diluting and protecting the hydro-carbon that a far higher temperature is needed for their decomposition, and this action gives time for the

[1] London Hygienic Congress, August, 1891.

oxygen of the air with formation of acetylene or the liberation of carbon, and hence without luminosity. The cooling of the air introduced, which is able to add to the general result, leads to loss of luminosity, although the cooling is less than the increase in temperature brought about by the oxidation due to the oxygen in the air. There are two drawbacks to atmospheric burners: first, the non-luminous flame may exhibit a tendency to "light back"—that is, to run down the burner tube to the supply nozzle; and, secondly, the phenomenon of injection in the Bunsen burner, by which the air is mixed with the gas, gives rise to a roaring noise resembling the escape of gas from a pipe. "Lighting back," or the ignition of the gas in the burner tube till it reaches the small gas nozzle inside the air-mixing chamber, may be caused by a down draught acting against the upward pressure of the mixed gas, or more commonly it results from too small a nozzle or choking of the nozzle, or else insufficient gas pressure to effect the complete injecting action. The defect of lighting back is a serious one and has created considerable prejudice against this system of gas firing from the fact that when a burner lights back incomplete combustion is the result, offensive acetylene is produced, and the fuel is blackened with soot. It can only be obviated by strict attention on the part of the maker to the proper adjustment of the burner and on the part of the consumer to the regulation of the gas-supply by allowing sufficient pressure to act upon the burner and by occasional cleaning of the burner. Lighting back frequently happens when the burners are first lighted, arising from the admixture of the gas with an excess of air present in the supply-pipe or in the burner. Before lighting, therefore, it is best to allow a small quantity of gas to escape. Governors or regulators fitted to each burner if there are separate taps obviate the necessity of regulating the main pressure, and give perhaps the most satisfactory results, although we have noticed a tendency in the flames of burners provided with governors to become in part and gradually luminous. The second drawback, which is occasioned by the roaring noise of the injector, is a difficulty which has not been satisfactorily met. Certain attempts have been made to produce a noiseless burner, but there is still room for considerable improvement in this direction.

Regulation of the heat.—Stoves fitted with one atmospheric burner, in which the flame is distributed through several holes, offer some inconveniences which we have not failed to notice. When the gas is full on they burn satisfactorily enough, but if it is desired to moderate the temperature of the room, and if the flames are accordingly turned down, they become very unstable and are likely to light back unless the supply of gas is kept above a certain limit; this limit in the type of stove referred to is a supply equal to 0·4-in. pressure, averaging a consumption of 20 ft. of gas per hour. It therefore follows that when the room is sufficiently heated, and especially a small room, it is difficult to keep the temperature at, say, from 60° to 65° F.; but with separate burners, each being provided with a tap, it may be regulated with exactness by reducing the number of burners to three or even to one.

Fuel.—The best fuel for gas firing is undoubtedly that known as clay-ball fuel or some modification of it. It gives the best heating result, has the nearest appearance to a cheery coal fire, and affords the maximum production of heat in the best form—namely, radiant heat—and saves loss of heat up the chimney. In grates to which gas firing is adapted log fuel is an excellent material. It is important, however, that the fuel should be packed well, as too great an interference with the normal flow of the flame (choking of the flame) tends to the production of unburnt gases as well as the emission of combustion products into the air. Cases of this kind occurred in a few of the stoves examined. Both asbestos fibre and iron trellis are inferior to clay-ball fuel, although the objection just urged does not apply unless the flames are unusually long. As shown in the table, neither form of fuel, metal or fibre, is economical in producing a degree of heat proportional to the amount of gas consumed.

Structure of stoves.—In view of the fact that most of the authorities on the subject of the efficient and sanitary warming of a dwelling agree that radiant heat conduces most to healthy conditions, we are bound to entertain a preference for gas stoves in which the heating effect is due to radiated heat only. Of course, in a stove constructed to maintain a constant stream of air warmed by passage over heated surfaces, generally metal, the fullest calorific effect is gained; but it is well known that air so heated loses some of its essential properties. Apart from this consideration, air scorched in this manner is apt to impart a disagreeable smell to the room, arising from the burning of dust particles. The consideration of these important points leads us to the conclusion that gas fires evolving solely radiant heat are to be held in preference to those fitted with a chamber for warming the air or in which provision is made for the warming of air by convection. An objection which may be justly raised, and one which we noticed in the course of the experiments, is that the enamel or varnish used to protect the metal of the stove gives rise to disagreeable smell and smoke when the stove is first used. This could be easily obviated, one simple course, which we believe the Gas Light and Coke Company adopt, being to put the stove through a preliminary test before sending it out. Otherwise an enamel free from this property should be used. Again, although water is by far the chief product of the combustion of gas, yet gas fires produce a drier atmosphere than coal fires, because the strong heat near the stove rapidly appropriates the moisture in the air immediately in front of the stove and carries it away up the chimney. The air is thus dried, and the presence of moisture is essential for healthy and comfortable inspiration. The temperature of the room also being more rapidly raised with gas than with coal, the capacity for moisture is greatly increased. In many cases, however, the drying effect experienced is due to an unreasonable overheating of the room, an occurrence which is more likely to take place with gas than when a coal fire is used, and the result invariably of neglect. A tray filled with water placed near the fire is stated to be a simple remedy. Summing up the evidence gained from the entire results of the investigation, we are induced to express the opinion that gas can be used for warming purposes efficiently without prejudice to health and without the formation of fog-forming constituents or air-contaminating products, provided that certain conditions are strictly adhered to. The following suggestions, based on an experimental review of the methods of gas-firing at present in vogue, may be taken as meeting the requirements which we deem to be essential.

1. It is desirable that the stove should afford radiant heat only.
2. For this purpose some form of clay fuel is best.
3. Attention should be given to the packing of the fuel, so as to avoid undue clogging or impeding the flow of the flames.
4. The stove should be supplied with separate burners with taps.
5. Some means of controlling the supply should be adopted. Governors or regulators are indicated.
6. A simple arrangement appears to be necessary by which undue drying of the warmed air may be avoided.
7. Indestructible enamel, or enamel little affected by heat, should be used for coating the stove; common paint, varnish, or ordinary enamel should be avoided.
8. An efficient flue should in all cases be provided. With gas fires, however, the flue pipe may be much smaller than the chimney required by coal fires.
9. The burner should be as far as possible noiseless.

In dismissing this important section of the subject it only remains to point out the manifold advantages of gas over coal fires—advantages, however, which are only too obvious to need description. None will deny the convenience of the system. With gas a bright, hot fire can be obtained at any moment, night or day; the heat can be regulated to a degree, the fire can be stopped at will, conveyance of coal is dispensed with, and the often-times troublesome and clumsy process of lighting with wood and paper is avoided, while cleanliness is an inevitable result of gas installation. At first sight it would appear that gas as fuel compares unfavourably with coal in regard to cost; but when all the factors (cleanliness, convenience, manipulative advantages) are taken into account—when the *pros* and *cons* are considered in minute detail—it is probable that, used rationally, gas runs coal very closely even on the score of expense. But one thing is certain—namely, that the universal adoption of gas as a source of heat would eventually lead to the complete abatement of the smoke-laden and unhealthy fogs which are a bane and a reproach to the most important city in the world.

COOKING BY GAS.

An inquiry of the present character would be incomplete without a few observations on the use of gas for cooking purposes. In this section we have made no experiments, the

main object we have had in view being to determine the practicability of using gas as a general fuel, and in showing how its substitution for solid fuel or coal would prove a means of overcoming the fog difficulty. We are, however, far from saying that the indifferent use of coal in the private kitchen or the restaurant for culinary purposes is not a serious factor in contributing towards the aggravation of fog and smoke; on the contrary, there is abundant reason for thinking that the kitchens of the restaurants and hotels of London are great offenders in this respect. We have confined our attention in this part of the inquiry simply to the inspection of some of the large kitchens of London as represented in certain of our great institutions—as, for example, workhouses, hospitals, hotels, warehouses, and other large establishments. As in all branches of industry, so in the manufacture of gas-cooking appliances there are to be found all grades of workmanship, but we have noticed with satisfaction that the leading and well-known firms pay close attention to those *minutiæ* upon which the working success of a gas-cooker largely depends. Indeed, high-class work is a *sine quâ non* when the construction of gas-cookers is concerned. Improvements occur almost every day, but we have seen cookers by leading makers that have been in use for over ten years and still give satisfactory results.

The advantages accruing from the use of gas for cooking purposes are especially manifest where it is employed on a large scale; in fact, where cooking has to be done, perhaps, several times a day for 1000 persons and upwards coal fires would prove to be unequal to the task. It is perfectly surprising to see in what small space a complete meal may be cooked, comprising joints, vegetables, and pastry, in a few hours for upwards of 1000 employés in, say, a retail establishment; and the cleanliness attendant on the use of gas in the kitchen settles all question both as to economy and as to efficiency. We have seen hundreds of pounds of meat roasted, large piles of potatoes baked, and all kinds of pies and pastry cooked, and yet in spite of the large quantity cooked the kitchen presented the aspect of a model dairy rather than a busy culinary department, in which when coal fires are used dirt and grime are commonly present. Cooking by gas is economical, simply because the gas is only used when it is required and its full effect is utilised to cook the food, whereas in ordinary coal fires much of the heat is lost up the chimneys. On a large scale it may be reckoned that for every pound of meat cooked one cubic foot of gas is consumed; that is to say, 100 lb., or nearly a hundredweight of beef, would require 100 ft. of gas for complete cooking, which means, at the rate of 3*s.* per 1000 cubic feet, a total cost of 3½*d.* The cost would be somewhat greater in proportion for small quantities of meat. In some gas cooking-stoves luminous flames are used, while others are fitted with non-luminous or atmospheric burners. It is maintained, on the one hand, that luminous burners are better adapted for roasting, while, on the other, some regard the atmospheric burner as cleaner and equally if not more efficient. In both cases the joint is exposed to the products of combustion, but as the oven is well ventilated these are immediately carried away through a flue—a provision of some importance seldom if ever made, or at least effected, in the ordinary coal fire oven. The advantages derived from the use of luminous flames are first that radiant heat is largely furnished—the form of heat used when a joint is roasted in front of the fire—and that the flame is constant. On the other hand, delicate analyses have shown that every luminous flame burning freely in air gives off distinct traces of carbon monoxide, acetylene, and even inflammable gases such as hydrogen and methane. The products of the atmospheric burners, on the contrary, are more complete; but there is the drawback already alluded to of the tendency of atmospheric burners to light back or of the air-holes to become choked, and very objectionable and disagreeable products then result. Periodical cleaning of the burners, however, is all the attention needed to successfully avoid this difficulty; and we have seen atmospheric burners that have been in use for several years and yet show little sign of deterioration. Stoves fitted with the atmospheric burner seem to be most in favour and in greater demand. One point in this connexion is interesting to observe, and that is that meat or other food cooked by gas seldom if ever exhibits any objectionable flavour which could fairly be attributed to the gas. This arises from the fact that the cooking operation is so certain and sure that vapours are constantly being emitted from the food, which effectually ward off any odours that may happen to be in the oven, which are then rapidly carried away into the flue by the constant draught of air passing through the cooking chamber. The flavour and character of the meat or food cooked by gas leave, as experience has shown, little to be desired. Consequent on the sharp heat and a plentiful supply of air around the joint cooked, the juices of the meat are kept in while the excess of fat is eliminated. This is the reason why in cooking with gas the joint is invariably richer in gravy constituents. Moreover, the fat which collects in a pan provided underneath the cooker is cleaner—in fact, nearly white,—the degree of perfection in this respect depending upon the distance the catchpan is situated from the source of heat. If it is too close the dripping is browned; but in some stoves an arrangement is made for drawing the fat away from the burners; dripping so obtained is beautifully white. Space forbids us entering into a description of the various and manifold appliances for cooking by gas and their several modifications, and we need only add that, in addition to the case of roasting, gas is equally applicable to grilling, cooking pastry, bread-making, boiling, and most other culinary operations; moreover, our inspection has satisfied us that in gas cooking-stoves, as in gas heating-stoves, the products of combustion are complete, and that smoke or soot is never produced.

MANUFACTURE OF GAS.

We may devote the remainder of the article, as already indicated, to the account of the present system of gas manufacture and purification. Occupying several hundred acres of waste space, the works at Beckton afford practical evidence that proximity of the works to the locality to be supplied with gas is not necessary, so that any offence likely to be caused in the manufacturing operations involved need not affect the residents of the metropolis itself. It may be remarked, however, in regard to this subject that statistics have shown pretty clearly that the health of those dwelling in the neighbourhood of gas-works is favourably rather than unfavourably affected by the operations concerned. It should be added also that the improvements in gas manufacture during recent years have been enormous, special attention having been directed towards the utilisation of products which formerly afforded the public health authorities some ground of complaint as having given rise to nuisance.

From the date of its inception about the year 1800 the actual process of gas-making has undergone but little change, but of course very considerable progress has been made in the methods of purifying gas. This is evident from a glimpse of the operations now in vogue at Beckton, where, it need hardly be said, gas is produced and purified in accordance with the very latest developments of engineering and chemical science. To be brief, the manufacturing operation consists essentially in the distillation of coal in retorts, the cooling and condensation of the volatile products in condensers, the washing of the gas in scrubbers to remove ammonia, and the purification of the gas from carbonic acid, sulphuretted hydrogen, and bisulphide of carbon by exposure to absorbents. Besides the plant just mentioned there are the meters or gas-holders, as well as other suitable buildings and accessories. The retorts are Ω-shaped, and are set horizontally in groups, each one being capable of holding a charge of from two to three hundredweights of coal, which requires from four to six hours for the complete expulsion of its volatile matters. The temperature in the retorts is from 1800° to 2000° F., the heat being supplied from coke furnaces beneath, twenty-five tons of coke being required to distil 100 tons of coal. Very marked improvements have recently been introduced, whereby the waste heat available in the products of combustion is utilised by means of the regenerative or the recuperative system of gas-firing. The economy thus effected is considerable, fifteen tons of coke now being required for the purpose instead of twenty. Connected with the mouthpiece of the retort is the ascension pipe, which rises and then bends over and dips into a long iron box, called the hydraulic main, which is half-filled with tar and liquor. The box is provided with an outlet-pipe to carry away the gas and liquid products to be further dealt with. The box or hydraulic main is a very essential part of the distilling plant, since it serves to collect the volatile products from a large number of retorts, and it acts as a cooler to liquefy volatile products and as a hydraulic valve or seal for the purpose of preventing any gas passing backwards through the ascension-pipe to escape into the air when the door of the retort is opened. The products of destructive distillation pass on to the condenser, which merely consists of rows of cast-iron pipes placed vertically or horizontally, and exposing a sufficient surface to the air to

admit of the cooling of the gas to atmospheric temperature. The gas is pulled through the condenser away from the retorts by exhausters or pumps, and it is subsequently forced through purifiers to the gasholder.

GAS PURIFICATION.

The efficient purification of coal gas is probably the most important and, in some respects, the most troublesome operation in gas-making. The impurities to be removed are ammonia, sulphur as sulphuretted hydrogen, bisulphide of carbon, and other forms, and carbonic acid. Ammonia must be removed because it is a diluent and is likely to give rise to objectionable products; sulphuretted hydrogen because its combustion results in sulphurous and sulphuric acids; and carbonic acid because its effect in lowering the lighting value of gas is very considerable. In the matter of the purity of the gas-supply the Legislature demands a certain degree of purity, represented by the complete absence of sulphuretted hydrogen, and in some cases the reduction of ammonia and carbon bisulphide to certain limits. For reasons already described it would be better if gas could be supplied absolutely free from sulphur compounds.

The first step in the purifying process is the extraction of ammonia, and this is done by the scrubbing or washing process—that is to say, the gas is simply passed upwards through long towers, or scrubbers, packed with coke or other suitable material, down which water trickles, absorbing on its way the soluble constituents of the gas, which are chiefly ammonia (NH_3), sulphuretted hydrogen (H_2S), and carbonic acid (CO_2). Hence, the resulting liquid—or gas liquor, as it is called—is a weak solution of ammonium bicarbonate (NH_4HCO_3), ammonium sulph-hydrate (NH_4HS), together with appreciable quantities of sulpho-cyanide (NH_4CNS) and thio-sulphate ($(NH_4)_2S_2O_3$ (*vide* Products). The gas thus treated still contains traces of ammonia, carbonic acid, and sulphuretted hydrogen, as well as bisulphide (CS_2), besides some seven or eight grains of sulphur per 100 cubic feet in unknown forms of combination. The difficulties attending the removal of carbonic acid and sulphur compounds from gas are very great, and require unceasing care and attention. The processes of purification are subject to slight variation according to the requirements of the case. Some works adopt one method and some another, but generally the processes followed out by the London companies—as, for example, the Gas Light and Coke Company at Beckton and other stations—is as follows. The foul gas is forced by the pumps or exhausters already mentioned first over fresh lime, which absorbs both sulphuretted hydrogen and carbonic acid, but the latter impurity attacks the sulphide of lime ($Ca(HS)_2$) so formed in addition to the lime itself, so that sulphuretted hydrogen escapes from the lime purifier and carbonic acid remains fixed. In other words, carbonic acid displaces sulphuretted hydrogen from the sulphide of lime as fast as it is formed, and carbonate of lime results. The sulphide of lime so formed absorbs part but not the whole of the bisulphide of carbon. Additional purifiers containing moist sulphide of lime are used in some works to remove this impurity. The Legislature demands that the sulphur other than sulphuretted hydrogen must be reduced to an amount not exceeding twenty grains per 100 cubic feet, all methods of purification known at present having failed to reduce the sulphur completely. As a matter of fact, the Gas Light and Coke Company keep well within the prescribed bounds, as we find that the total quantity of sulphur in the purified gas seldom exceeds eight grains—that is to say, less than half of the prescribed amount—a fact which testifies to the care and attention that are bestowed on this section of the purifying process. The sulphuretted hydrogen in the gas, first absorbed by the lime and then expelled again by the carbonic acid acting on the resulting sulphide, is then passed over a bed of some active form of hydrated oxide of iron, commonly Irish bog-ore. Here the reaction may be represented as taking place in two ways, as follows: $Fe_2O_3H_2O + 3\,H_2S = Fe_2S_3 + 4\,H_2O$; and $Fe_2O_3H_2O + 3\,H_2S = 2\,FeS + S + 4\,H_2O$. The sulphides of iron so formed are readily oxidised on exposure to the atmosphere in such a manner that oxide is regenerated and is once more available for the purification of gas from sulphuretted hydrogen. In the oxidation process sulphur is set free, and finally ferric oxide is formed. After some time, however, the material deteriorates and is then known as "spent oxide." It is valuable, however, on account of the sulphur it contains (55 per cent.) for the manufacture of sulphuric acid. Other methods have been proposed and used for the purification of coal-gas with the view of effecting more complete purification and the utilisation of the sulphur. Such, for instance, is the ammonia purifying process, in which ammonia is used to eliminate the sulphur and the carbonic acid. The liquid so formed is boiled, whereby sulphuretted hydrogen and ammonia are expelled. The latter is absorbed in sulphuric acid, and the former passes on, after admixture with a definite proportion of air, into a kiln containing heated oxide of iron, when the following reaction takes place: $H_2S + O = H_2O + S$. The sulphur is thus recovered in the elementary form and in a remarkable state of purity. The purified gas is then stored in gas-holders, whence it is distributed.

Before leaving this section of the subject a short account of the present methods for enriching gas—that is, the addition of illuminating constituents so as to comply with the Parliamentary requirement of sixteen-candle power light—may opportunely and conveniently be described. In practice it is found that in order to obtain a profitable yield of gas from the ordinary gas-coal now supplied some deterioration in the illuminating value takes place. This depreciation may be restored by resorting to one of two methods—(1) by mixing a certain proportion of cannel coal with the charge, or (2) by enriching the gas after production with carburetted gas. Of these two methods the latter is growing in favour. Moreover, the supply of cannel coal, which yields *per se* a gas of very high luminous power (thirty candles), is gradually becoming exhausted; while, in view of an increasing demand for this coal for the purpose indicated, the price which the proprietors may be tempted to ask for it is likely to render its use impracticable. So resort is commonly had to carburetting—that is, enriching with oil gas. Oil gas, which is probably familiar to our readers as the gas used for lighting railway carriages, is made by simply submitting to distillation shale oil of the description that is too heavy for use as burning and too light for use as a lubricating oil of specific gravity 0·84. Its illuminating value is sometimes as high as fifty candles. In the enrichment of coal gas, however, oil gas is not used alone, but is first mixed with water gas in the proportion of one of oil gas to one of water gas. Water gas is excellently well suited as a carrier or vehicle of the hydrocarbons of oil gas, having a remarkable capacity for maintaining the oil gas in a permanent condition. Water gas is made by firing coke in a generator and blowing in air until the fuel is incandescent, the product of combustion, which is known as producer or generator gas, being passed from a pipe at the generator top through a super-heater, where it heats the furnace bricks to whiteness. Steam is then passed through the super-heater and through the fuel, and the gas produced is pumped through washers as in the processes for purifying coal gas. The reaction taking place may be represented thus: $H_2O + C = CO + H_2$. As will be seen from the following analysis, water gas is approximately a mixture of hydrogen and carbon monoxide in nearly equal proportions.

	Per cent. by volume.
Hydrogen (H)	49·17
Methane (CH_4)	0·31
Carbon monoxide (CO)	43·75
Carbonic acid (CO_2)	2·71
Nitrogen (N)	4·06

This gas, mixed with its own volume of oil gas, is added to coal gas for enriching purposes in such proportion that in every 100 volumes of coal gas 10 volumes of the enriching mixture are contained.

PRODUCTS.

When a ton of coal is carbonised the following products with their quantities are obtained: Gas, 10,000 cubic feet; tar, 10 gallons; ammoniacal liquor, from 25 to 30 gallons; residual coke, 12¾ cwts. In these products no less than 44 distinct hydro-carbons belonging to all the known series have been recognised: 7 distinct phenols, including 3 acids, acetone, and water; 21 nitrogen compounds, including ammonia and aniline; 9 sulphur compounds, including sulphuretted hydrogen and thiophen; besides hydrogen, nitrogen, and carbon. It is therefore evident that the process of destructive distillation of a complex substance like coal is far from simple; indeed, in spite of the great number of products enumerated above, almost every day new members are being added.

Broadly, the by-products of commercial value are the ammoniacal liquor and the tar. The liquor is almost always employed in the manufacture of sulphate of ammonia, which is valuable for agricultural purposes. The total quantity

produced in this country in 1886 was about 100,000 lb., 70,000 lb. of which were exported. Coal tar is worth about 7*s.* a ton, some 700,000 tons being produced in the same year, this quantity being capable of yielding 3,000,000 gallons of benzene. From coal tar are obtained by distillation the following valuable bodies: benzene, toluene, naphtha, carbolic acid, creasote, anthracene, naphthalene, and a residue of pitch; the benzene and toluene yield aniline, whence the dyes magenta and methyl violet are obtained; the phenol and creasote form the basis of valuable antiseptic and disinfectant preparations, and the first-named is also the source of the dye aurin; naphtha is valuable chiefly as a rubber solvent; naphthalene yields naphthylamine, a beta-naphthol, vermillene scarlet, and naphthol yellow; anthracene gives on treatment alizarin, from which a great number of beautiful dyes are prepared. By itself, also, coal tar has many applications, as, for instance, for making gas, as fuel, and as a preservative for building materials. Then should be mentioned the legion of coal-tar derivatives, which form a most valuable and important list of remedies in the materia medica. Thus many of the antipyretics, hypnotics, narcotics, disinfectants, and antiseptics which the chemist has placed at the disposal of the physician are derived from coal tar. Antipyrin, antifebrin, analgen, exalgine, salol, saccharin, and salicylic acid occur to us as examples. Indeed, in face of the impetus which the introduction of coal tar derivatives in therapeutics has given to medicine, and in view also of the value of the ammonia produced as a fertilising material, it is difficult to say which of the products of coal distillation are of the greatest value and which may be regarded as the direct, and which the by-products, for it is evident that the tar and liquor are as useful as, if not more so than, the gas itself, the manufacture of which has led to an industry of an importance which could never have been foreseen. Persons talk of the probable decline of the gas industry, but it does not generally occur to them that if the supply of by-products of the gas-maker were stopped the result would probably prove infinitely more serious than the mere discontinuation of the supply of gas.

In this investigation the work of our Commissioners has been much facilitated by the assistance of several gentlemen connected with the Gas Light and Coke Company, particularly of Mr. Browning, their senior inspector, at Horseferry-road, and Mr. Wigley, the manager of the stove department, to whom we tender our thanks. We may take this opportunity also, in conclusion, of expressing our appreciation of the action of the company in affording our Commissioners an opportunity of inspection of the machinery, works and plant connected with the manufacture of gas, and in kindly placing at our disposal an unstinted supply of gas appliances which were indispensable for the experimental portion of the inquiry.

THE LANCET Laboratory.

THE LATE SIR ANDREW CLARK.

WE have been favoured with the following communications from Professor Huxley and Dr. Lockhart Robertson which will be read with much interest:—

The Right Hon. T. H. HUXLEY writes: "I was appointed assistant surgeon to H.M.S. *Victory* at Portsmouth in March, 1846, and was, in the ordinary course, detailed for duty at Haslar Hospital until such time as the Admiralty might be pleased to order me to join a sea-going ship. Some time after—I think two or three months—a young Scotchman joined our mess. He was very slender, of somewhat stooping carriage, and with that florid delicacy of complexion which commonly marks the *poitrinaire*. Most of us were tolerably vigorous young men, and we thought that our new colleague, Andrew Clark, had a good deal less prospect of standing the life that was probably in store for him than we had. In fact, he looked just the sort of man to die of consumption before the age of thirty-five. Now it so happened that three out of the small company of assistant surgeons at Haslar during the five months of my residence—Alexander Armstrong, John Watt Reid, and myself—were destined to prove our competency to go through a fair share of hard work, official and other; and it would have very much surprised us to hear that Clark was not only to work harder, but to go on working for years after we had been put upon our respective shelves as retired veterans. I doubt if a good deal more wisdom and experience than any of us possessed would have divined in our very quiet, and even retiring, young messmate the prodigious store of mental and physical energy upon which he was able to draw in later life; and I venture to be certain that, of all careers imaginable, that of the most fashionable physician in London is the last that anyone, however sagacious, would have predicted for him. I went my way to the other side of the world, for four years, in the fall of 1846, and, after my return to England, the kindly fates determined I should no longer be exposed to the risk of committing homicide as a grievously incompetent member of the noblest of professions. So my former messmate and I drifted far away from one another on our several courses, and only indirect accounts of him reached me from time to time. I heard that destiny had withdrawn him from the service, no doubt for reasons directly opposite to those which led to my removal; then, that he was practising in some far-off region of London, eastward of the fashionable Eden; then, as it seemed quite suddenly, I learned that he was a hospital physician of great repute and rapidly increasing practice, residing in the very omphalos of Æsculapia—Cavendish-square. We met now and again, as busy men in London do; but I suppose our renewed acquaintance would have stopped there, had I not fallen ill in 1871 of what it was then the fashion to call overwork. I was desired to rest, go to Egypt, and do all sorts of other things; which I did, but with no other result than that of gradually descending into lower and lower circles of the Inferno of hypochondriachal dyspepsia. After a year or more of this increasing wretchedness, a friend fairly worried me into consulting the doctor who was all the fashion, and who, I confess, seemed nowise the better in my eyes for being so. It is difficult for me to speak in moderate language of the time and pains which one of the hardest-pressed of physicians devoted to my case; of his thoughtful and self-sacrificing care not only of me, but of several members of my family; of the scientific sagacity of his diagnosis; or of the firmness with which he insisted on somewhat ascetic remedial measures which, in the opinion of not a few of my friends, tended to speedy euthanasia. Suffice it to say that I was practically well in three months, and remained in a very good state of repair for a dozen years. From that time onwards, we were fast friends, none the less for heartily disagreeing about a good many fundamental questions. Thoughtless people blame Sir Andrew Clark for not leaving off work when he had reached wealth, fame, and the official headship of his profession. But though he may have liked these rewards as well as another, my friend did not live for them. His work was his life, and no true friend would have desired for him, of all men, a prolongation of that shadow-life of enforced rest, in which there is no repose."

Dr. LOCKHART ROBERTSON writes: "My first recollection of Sir Andrew Clark is in the year 1842-43 in the Edinburgh extra-academical medical school. He was assistant to Dr. Hughes Bennett, who was then just appointed pathologist to the Royal Infirmary, and Clark used to demonstrate to students like myself, of his own age and standing, the morbid anatomy at the daily post-mortem examination. I remember him as a shy, delicate-looking, reserved student, wearing his fair brown hair long, like a German student. He made no intimacies and worked sedulously at his studies, as he did in after years at his practice. During the same session Clark attended the lectures on systematic surgery delivered by my father, Dr. John Argyll Robertson, who was then senior surgeon to the Infirmary. I quite remember, and once in after years told Sir Andrew Clark, the story of my father contrasting Clark's diligence with my own work and saying to me, 'Clark is the best student I ever had in my class; if you both live you will see him head of the medical profession.' In Edinburgh Clark carried off every medal and prize offered, and it came to be so assured a success that hardly any of us other students cared to compete against him. I did not see Clark between 1846, when he joined the Naval Medical Department and I the Army Medical Department, and 1854, when I found him established in practice in London. I used then often to call on him in Montagu-place, and spent many hours chatting with him in his consulting-room. I was one of the many friends who, foreseeing his coming eminence, urged him to move westward. I remember saying to him: 'Take the best house you can find, never mind what the rent may be.' Our close intimacy continued to the date of his death, and in spite of the pressure of that enormous practice our correspondence never quite ceased. The same beautiful handwriting from time to time brought me words of deep friendship and of consolation and encouragement in my recent hours of trial. He used to reproach me with not calling often

enough in Cavendish-square, but I felt that his time was no longer his to give thus to an old friend, and I used to content myself with inquiry of his butler how his master was. I have beside me a letter Sir Andrew Clark wrote to me after his election as President of the Royal College of Physicians. He accepted the office with many misgivings as to his fitness, which his brilliant success therein utterly stultified, as I knew it would. The words he says on this point are: 'Although sitting in this seat unworthily, I can at least say this—that no sacrifice of time or labour shall be wanting to justify the efforts of my friends.' I am only expressing the common consent of the College when I say that, with the one exception of Sir Thomas Watson, no President has filled the chair with like ability, diligence, and influence on public affairs and those of the profession as he whom we now all mourn."

CHOLERA.

THE exact nature of the epidemic sickness which has prevailed at Santa Cruz de Teneriffe since the middle of October last has been the subject of various and contradictory reports. According to intelligence from *The Times'* correspondent at Madrid, however, it has been declared to be cholera by the Government medical inspector sent to report upon it. All the ports of the island of Teneriffe are consequently declared to be infected, and arrivals from Santa Cruz are subjected to ten days' quarantine. The epidemic in Bilbao and in the province of Biscay is officially considered to be at an end.

Cholera has quite disappeared from Moscow, which is now free of the epidemic, and a special thanksgiving service, attended by several State officials and all the local authorities, was recently held in the cathedral of that city.

From Berlin we learn that cholera had not up to the latest intelligence altogether disappeared from Germany. There were 27 cases in the German Empire in the course of the week ending the 16th inst., and it was reported that the disease had broken out in a Russian village on the right bank of the Memel, close to the Prussian frontier, and that 4 deaths had occurred.

Intelligence through Reuter's Agency reports that a considerable increase of cholera has taken place at Constantinople within the past few days and had given rise to much uneasiness. It is added that some agitation had arisen among the lower classes owing to the spread of false reports concerning the medical men appointed by the Government to combat the disease, and to the unfortunate occurrence of some cases of accidental poisoning.

CHOLERA IN ALGERIA.

(FROM OUR SPECIAL CORRESPONDENT.)

ACCORDING to the Dresden Convention, all the contracting parties were to be informed whenever there was a *foyer* of cholera. The French Government will have to effect many improvements before this, the most important clause of that Convention, is carried out. During the months of June and July there was a serious epidemic of cholera at Marseilles. More than 600 persons died from the disease, and yet the existence of the epidemic was not announced and no warning was sent to the various Governments that had signed the Convention. It was not till THE LANCET, in its issue of Aug. 6th, published these facts, which were not in any way contradicted, that the Governments concerned knew precisely what had taken place. At Marseilles, however, it was difficult to completely conceal the existence of cholera; and, though the French authorities gave no warning of the disease, the foreign Consuls were able to inform their various Governments, but without giving precise details. It now appears that, while there was a *foyer* of cholera at Marseilles, there was another in Algeria. The presence of cholera at Marseilles was at once suspected, and in a short time I was able to give full details of it; but concealment was much easier in Algeria. Even the French Government was not, I believe, fully informed of what was taking place. It was known that there had been one or two cases of cholera in Algeria. At Algiers itself there were, I think, two or three deaths from the disease, and other cases were mentioned as having occurred at Philippeville or at Constantine. These were considered to be isolated cases, possibly of foreign importation, and no one suspected that they were the offshoots of a serious epidemic which existed inland. The few cases of cholera noted on the coasts came, however, not from the sea but from the borders of the desert.

From information of the most reliable character I have now ascertained that the first case of cholera occurred among the garrison at Tougourt at the end of the month of June. A few days later cases were reported at Tiliach, a native—that is, an Arab—commune in the district of Biskra. At first there were but isolated cases, but soon the disease spread and broke out not only in the town of Biskra but throughout the province of Constantine. Biskra, it is well known, is celebrated for its mild winter climate and has of recent years become a favourite winter resort for patients suffering from lung disease. By railway access can be obtained to Constantine, and thence, by ship or by rail, Algiers is easily reached. The epidemic travelled along this well-frequented route. At the commencement of July the authorities of Biskra declared that it was no longer possible to doubt the true character of the disease. The prefect of Constantine sent a special medical mission to Biskra. The chief physician of the civil hospital of that town arranged for the immediate establishment of an ambulance hospital where all suspicious cases were to be treated. Elaborate directions were given as to suitable means of disinfection. While it was judged necessary to take the most energetic measures the greatest secrecy was observed. Nor was this the only way in which the principles accepted by the Dresden Convention were disregarded. The authorities of the province of Algiers at once established a kind of sanitary cordon against travellers from the province of Constantine. Dr. Soulié, Professor at the Medical School of Algiers and physician at the Civil Hospital of Mustapha, was deputed to establish a sanitary post at El Kantara. Here there was a large ambulance hospital, and other sanitary posts were organised at Bouhira, on the railway line from Constantine to Algiers; at Boussaade, in the department of Algiers; and at M'Sila, in the department of Constantine. By these means it was thought that the epidemic would not spread beyond the last-mentioned department and province. It is needless to say that this was a useless precaution. The epidemic followed its course without being in any way affected by these frontier regulations. At first it spread rapidly at Biskra among the native Arabs. This district has a population of 103,763 inhabitants, who, with the exception of the garrison and those attached to the hotels of the winter station, are all Arabs. At the end of a fortnight the worst was over, and Dr. Soulié was allowed to return to Algiers; but the epidemic was not suppressed, though it had almost ceased at its principal *foyer*. It now travelled northwards towards the larger centres of population, and the communes of Khroub, M'Lila, Chateaudun, and Aïn M'Lila were the next to suffer. Khroub, which has a population of 9340, is only a few miles from the capital of the province, and soon cases were reported at Constantine. At M'Lila there is a population of 49,659 and at Chateaudun of 29,630 inhabitants. While cholera thus spread in a northerly direction, fresh cases occurred in the extreme south, where the epidemic had begun—namely, at Tougourt. From Constantine it reached the sea coast at Phillippeville, thus following the railway line, and arrived at the port of Collo, having first passed by Milah and El Milia, which are on the high road from Constantine to Collo. The authorities declare that all possible measures were taken to prevent the spread of the epidemic, and certainly, though the disease broke out in numerous places, the number of cases in each locality was generally very small. Full instructions were sent to all the medical men practising in the districts likely to be infected, and practitioners from the hospitals of Constantine, Mustapha, and other places were sent to help wherever the epidemic assumed a threatening aspect.

After travelling from south to north cholera spread east and west along the main lines of communication. Towards the middle of September there were, in spite of the sanitary posts, some cases at Broussaade, and then the neighbouring tribes suffered from the epidemic. The number of cases only commenced to abate at the beginning of October.

The authorities believe that the Boussaade epidemic was due to Arabs who managed to pass the sanitary posts and coming from the province of Constantine, brought the cholera to the province of Algiers. They were also natives of Constantine who brought the disease to the Arab camps of El Bethem and Guechtouli, in the commune of Bir-Babalou, and to the commune of Djurdjura; but in all these places there were very few cases. Little or no difficulty was experienced in coping with the disease. In the east cholera reached Guelma. Thus, if a line be drawn from Collo and Philippeville on the seashore through Biskra to the desert at Tougourt, and another line from Guelma to the frontiers of the province of Algiers, there will be a cross representing the ground covered by the epidemic. It is important to note that the latter commenced at the furthest point from all lines of communication with the outer world. The Arabs affected were many of them poor in the extreme. They were not such as had travelled; they may ride or walk to some neighbouring market or camp, but they never leave the district in which they live. Dr. Soulié is quite convinced that the epidemic was not imported. He believes that it was of spontaneous growth and maintains that cholera is endemic in the country. Every year there are a few deaths from what to all intents and purposes is so like cholera as to be indistinguishable from that much-dreaded disease. It is only under exceptional circumstances that these few cases develop into a regular epidemic. If cholera was imported, then this must have happened in 1867. At that time there was a very severe epidemic at Batna, a place situated about half-way between Biskra and Constantine. A military cordon was then established round that place; but nevertheless some of the Arabs managed to get through, for according to a report drawn up at the time by Dr. Dukerley no less than thirty persons died from cholera who, in spite of the cordon, had managed to escape from Batna. Dr. Soulié thinks that the germs then introduced have now been revived, or else that they have never entirely ceased from causing every year a few cases of cholera. The utter want of any approach to sanitation at Biskra easily accounts for the somewhat severe epidemic that has prevailed this summer in that district. There were also a great many deaths at Khroub. At all the other places mentioned, and in some districts not named, the disease has been very isolated. Altogether it is estimated by the authorities that there have been about 1000 deaths due to cholera, but of this number only thirty-seven were those of Europeans. On the other hand, the epidemic is not yet over. News travels slowly. During the third week of October there were unfavourable reports from Ain M'Lila, El Milia, Tedj-en-Zala, and Graren. At the last-mentioned place the mayor's son died from the disease. At the seaport of Collo there were on Oct. 16th last no less than 45 cases and 9 deaths. In the arrondissement of Guelma there were 5 deaths at Séfia and 2 deaths at Guelma.

From all these facts it is evident that an epidemic which in the single province of Constantine cost more than 1000 lives has prevailed in Algeria since July last and is not yet extinct. Notwithstanding the provisions of the Dresden Convention, no information has been given of its existence. Even in France the public are still in ignorance of its incidence there. None of the French newspapers have given any details of the epidemic. Further, it is announced that cholera occurred inland, and that it travelled along the railway lines and the main roads, thus seeming to follow the principal channels of human intercourse. The sanitary cordon failed to prevent cholera from crossing the frontier line which separates the provinces of Constantine and Algiers. With the exception of two localities, Biskra and Khroub, the number of persons who suffered was not great. Thus in Algeria, as in Europe, cholera prevailed during the summer in a great many districts; but, as a rule, there were only a few deaths in each locality attacked. These are interesting and significant facts which should have been communicated to the outer world.

CHOLERA IN ENGLAND: ITS BACTERIOLOGICAL INTERPRETATION.

As our readers are aware, some difficulty has been experienced as to the exact significance which should be attached to the bacteriological results which have been published in England during the past autumn as regards cases of alleged cholera. Through the courtesy of the editors of the *Practitioner* we have been furnished with advanced proofs of two articles that will appear in the forthcoming number of that periodical for December. The first is upon the subject of our heading, and the second is a translation from the German of a paper by Professor R. Koch dealing with the present position of the bacteriological diagnosis of cholera. Confining our attention for the present to the former article we may say that in this country the bacteriological results have at times been termed "positive," at others "negative," and again at other times, and probably more frequently, "indistinguishable from true cholera." The editors of the *Practitioner* have sought to ascertain the proper meaning which it has been desired by the Medical Department of the Local Government Board, and by their bacteriological department, to convey by the use of these terms. Bacteriological researches are being continued in a number of cases and no final report has been received, but in the meantime a statement is put forward in the *Practitioner*, embodying the views which are held both at Whitehall and by Dr. Klein. This statement affords a clear exposition of the position assumed with regard to the subject in question; and this position is perfectly logical, reasonable and very much what we had ourselves surmised, but had no authority for actually assuming to be the case. Seeing that a good deal of doubt and misapprehension was likely to arise, and as a matter of fact did arise, as to the exact meaning which the profession and the public were to attach to the terms used, we do not see why some definition of them giving a key to their correct reading was not afforded at an earlier stage; however, the position shortly is this: the bacteriologist to whom material from a reputed cholera case is submitted restricts his investigations solely towards determining the one question which he is called upon to decide—viz., whether such material does or does not contain Koch's comma bacillus. As a matter of fact, he is often in entire ignorance of the antecedents, clinical history, and facts of the reputed cholera case; nor, strictly speaking, would he be justified in being influenced by them if he knew them. For the bacteriologist they have, indeed, no significance; he has simply to determine with the least practicable delay the presence or absence of a given micro-organism in the material submitted. There are certain *indicia* open to him in forecasting the probable presence or absence of the comma bacillus in the physical conditions presented by the dejecta and in the pathological condition of the bowel, if that be sent to him. These *indicia* are then briefly given and described in the statement under review, together with the tests and methods of culture. When, however, as not infrequently happens, the physical conditions of the material submitted to the bacteriologist are not for any reason unequivocal, other and further bacteriological methods of inquiry and elucidation are had recourse to or followed. The business of the bacteriologist throughout, however, is to state the results of his examination of the samples or specimens to the public health authority concerned, on whom devolves the responsibility of taking any necessary action in view, after consideration of the total facts of the case. The bacteriological tests and methods of cultivation adopted need not detain us; it will suffice to say that advantage is taken of the results of recent researches and plans of procedure.

While the bacteriologist has commonly no difficulty at all with regard to certain attacks of illness in affirming them to have been Asiatic cholera, there are, on the other hand, not a few cases which, from the bacteriological point of view, are declared to be unquestionable examples of cholera that have not always appeared to have been so when regarded from the clinical phenomena, antecedent history, and surroundings of such cases.

"But in its negative aspects the testimony of bacteriology with regard to cholera is even more unsatisfactory. Experienced observers, who have devoted exceptional attention to the clinical diagnosis of cholera, have met with cases presenting clinically and pathologically all the characters of Asiatic cholera, and occurring, moreover, at times when, and in localities where, true cholera was rife, but which, nevertheless, when bacteriologically investigated, have failed to afford any evidence whatever of the presence, in material from the patients in question, of Koch's comma bacillus.

"It is facts of the latter class that tend to influence certain pathologists who, while accepting Koch's comma bacillus as an everyday concomitant of cholera, have hesitation in accepting that vibrio as the *causa causans* of the disease.

"Facts of an allied sort have led to considerable difficulty in differentiating between cases of true cholera of the Asiatic type and rapidly fatal attacks of so-called English cholera, which in their clinical features so much resemble the Asiatic disease. The Public Health Department of the State was early confronted with this difficulty during the past autumn, and it was with a view to its solution, if possible, that the President of the Local Government Board announced in the House of Commons that he had directed an investigation into the relation, if any, between English cholera and the Asiatic type of the disease. The results of any such inquiry must necessarily take time. The investigators will have to take account of clinical, pathological, and bacteriological considerations; and they must necessarily have regard both to the influence of climate and to the presence or not of true cholera in the country."

It will be seen from the foregoing abstract of the article in the *Practitioner* that the meaning of the terms which have been used has been clearly explained. It throws no light, of course, on what Professor Klein's views are at present in reference to the exact connexion which exists between Asiatic cholera and Koch's comma bacillus, and we are consequently ignorant of whether these have undergone any modification or not by his additional experience and researches since his return from India.

THE INSANITARY CONDITION OF CHRIST'S HOSPITAL.

ON Tuesday last Dr. Sedgwick Saunders, the medical officer of health for the City of London, laid before the Commissioners of Sewers for the City a report upon the sanitary state of Christ's Hospital; and this in our opinion discloses a most serious condition of affairs. Dr. Sedgwick Saunders's report in substance ran as follows:—On Oct. 24th I reported an outbreak of scarlet fever at Christ's Hospital School (there having been twenty cases of that disease notified to me in a period of thirteen days—viz., 10th to 23rd October) and informed you that it was necessary to make a searching investigation into the general sanitary condition of the establishment. This could not be done safely during the residence of the scholars, and accordingly, in a conference with the treasurer, head master, and resident medical officer, Dr. Alder Smith, I advised that all the boys should be sent home excepting those then under treatment in the infirmary. Assent was at once given to this course, and it was so judiciously carried out that in upwards of 500 boys only two cases of illness have been heard of by the school authorities since they left, a result which reflects the highest credit upon the resident medical officer, who carefully examined every boy before he was allowed to return to his friends. Neither the number nor the severity of the cases would have called for so drastic a measure, but I had a deep conviction, founded upon past experience and information conveyed to me at various times, that the school buildings throughout required a thorough inspection." Dr. Sedgwick Saunders then mentioned that his action in the matter had been criticised, but he had never said that the outbreak of scarlet fever was due to the condition of the drainage, but only that this might have conduced to the spread by leaving the boys susceptible to the infection.

He then briefly described the drainage system of the hospital as follows:—"The drainage of Christ's Hospital is conveyed to the public sewers by means of brick culverts of various shapes and sizes; the largest of these, which has a vertical internal height of 5 ft. with a horizontal diameter of 3 ft., is the main drain and has two outlets, one in Newgate-street and the other in King Edward-street. This passes beneath the playground and collects the drainage from private residences, dormitories, class-rooms, stables, closets, and urinals by means of contributory drains, either of old brick construction or consisting of earthenware pipes of different dimensions. The exact calibre of these drains can only be determined by their being opened up from their origin to their destination at a great expenditure of time, labour, and cost, which would be wasted if a reconstruction of the entire system was ultimately adopted. The flushing tank of the main drain has a manhole cover of old pattern, defective, and not air-tight, and the lifting of the valve either east or west for flushing purposes would be followed by an escape of the sewer gas into the playground. This opportunity for the inhalation of depressing, unwholesome air may explain the recurrence of scarlet fever at Christ's Hospital after the first case had been imported from without. On the west side of the flushing tank the main culvert proceeds beneath the bath house (not the swimming bath) and the great hall to an open space known as the gymnasium, and beneath the houses in Newgate-street to the public sewer. It collects the drainage from dormitories, offices, the great hall, the kitchen, bath house, swimming bath, infirmary, closets, and several residences by accessory drains of various construction in various states of repair. The existence of large brick culverts in connexion with the drainage of houses is, and must always be, a standing source of danger; but in the case of Christ's Hospital the stream of sewage in the said culvert was seen to be sluggish and, excepting in portions where the invert was broken and had subsided, not more than *two* inches deep, so that the enormous area (in a space measuring 5 ft. by 3 ft.) over which any gases resulting from decomposing sewage might be diffused will be readily seen."

Dr. Sedgwick Saunders here laid before the Commissioners proposals for remedying this condition of affairs, illustrated by plans, and then went on to consider the condition of the drains. "By my instructions," he said, "the inspectors entered and made a personal investigation of the drains. The western portion of the main culvert, having its outlet in Newgate-street, was found to be in a most insanitary condition. Adjacent to the flushing-tank mentioned above, and for a considerable distance westwards, at least three inches of solid deposit was found in the invert; stagnant water also stood at the same spot five inches deep. Large quantities of broken crockery, consisting of jam-pots, plates, cups and saucers, &c., were also observed and offered great impediment to the flow of the sewage. As the swimming bath has a capacity of about 40,000 gallons and is emptied twice a week, the main drain has great flushing power brought to bear upon it, and its present defective condition, therefore, seems to indicate that it was either laid originally at too flat a gradient or has become broken and sunken in parts since; otherwise deposits would not accumulate nor would water lie stagnant in it. This flushing is in addition to that coming from the tank at the head of the drain and also from an automatic flushing tank attached to the trough closets. It has not been ascertained whether the outlet pipe from the swimming bath is trapped or not; in the latter case great danger of escape of sewer gas direct from the large culvert would exist should the sluice valve be left open when the bath is empty. The brick drain beneath the yard where the pump is situated was found to be in very bad condition. The brick drain taking the trough closets at the rear of the grammar and mathematical schools was also found to contain about two inches of deposit."

Dr. Sedgwick Saunders then made some remarks upon the results of testing the drains and upon the general sanitary details of the school, entering into more particulars with regard to the Infirmary.

"In the Infirmary the soil-pipes, which also receive the rain-water, are inside the building, and, so far as I have been able to trace, are of iron, the joints of which are very liable to become defective at any time and to admit foul air from the drains into the wards. To the best of my belief no fresh-air inlet exists to these drains. The five lavatory basins and bath on the first floor are not trapped, all discharging through one pipe into a D-trap. No grave objection can be offered to this method under ordinary circumstances, but it must be remembered that this is a hospital standing in the grounds of a large school establishment and that its sanitary arrangements should be as perfect as possible in order to minimise danger from defective fittings. In the Infirmary, also, the waterclosets open immediately into the wards, have an exceptionally small area, and are neither properly lighted nor ventilated. Some attempt has been made in both directions by the insertion of a small window in each of these waterclosets; the effect of this is to drive all offensive odours directly into the sleeping-rooms. The ceilings are considerably below those of the wards. It is surprising that such makeshifts have been permitted to exist, in spite, I am told, of repeated remonstrance, extending over many years, from the resident medical officer. The ground being opened at the foot of the soil pipe (which also acts as a rain-water pipe) at the northern end of the infirmary, no evidence of any disconnexion from the main drain could be discovered, so that this pipe, with very little doubt, has direct aerial communication with the public sewer in Newgate-street."

Dr. Sedgwick Saunders then severely criticised the closet and urinal arrangements in the dormitories and concluded by recommending entire reconstruction of the general system of drainage. With this object in view, he advised that the Commissioners should exercise their statutory power as the sanitary authority of the City and order the usual notices to be served upon the governors of Christ's Hospital to reconstruct their drainage and remedy the other defects. After some debate upon an amendment moving that consideration of the medical officer's report should be adjourned until the governors had been communicated with, the Commissioners adopted Dr. Sedgwick Saunders's recommendations.

While sympathising sincerely with the governors of Christ's Hospital in their present unfortunate plight, we are entirely in accord with the action of the Commissioners in their endorsement of their medical officer's recommendations. It is, of course, a serious proceeding on their part to take a step which must, temporarily perhaps, but seriously, interfere with the well-being of so useful and excellent an educational endowment as the Bluecoat School; but the condition of affairs that has been revealed by Dr. Sedgwick Saunders is so deplorable that it would have been in contravention of their duty to the City of London had the Commissioners neglected to take immediate action. We note with pleasure the cordial recognition that Dr. Alder Smith's efforts have received.

SANITATION AND THE MOSAIC LAW.

ALL students of the five books of Moses—whether these were from one pen, and that the pen of Moses, is not in question here—have recognised in their pages the regulations for a remarkably practical and comprehensive sanitary system; and at a time when a perversely literal interpretation of their historic side has subjected them to some popular discredit, it is natural that the Chief Rabbi should come forward in order to insist upon their undeniable merits.

Dr. Hermann Adler, in addressing the Church of England Sanitary Association at the Church House, Westminster, early in this month, proposed to make it clear that as a sanitarian the great Jewish law-giver was not only well ahead of his time but in many respects abreast of ours, and to show also that the Jewish "tradition"—i.e., the two parts of the Talmud—supplemented or even surpassed the teachings of Moses in this respect. Dr. Adler's case was a good one, and he thoroughly established it, if it could be said to need establishing; his only difficulties centred round one point—the alleged cruelty of the rabbinical procedure in the slaughter of food animals. He might have said outright that this point was not the only one in the Jewish code worthy of consideration and that its bearing upon sanitation was difficult to see; but it was a wide experience of his fellow-man that prompted him to enter at length into a discussion upon what was really a side issue; for he recognised that in big questions it is almost always some unessential detail that comes in for popular notice. We see this treatment meted out by the public to all large movements, and until human nature is changed we shall continue to see it. One small sensational point is seized upon and discussed and over-discussed to the obscuration of the general topic. The necessity for the Contagious Diseases Acts (Human), for instance, is, when under public consideration, always represented as turning upon whether or not on some deplorable occasion a pure woman has been mistaken for one of her frailer sisters. The broad question of dissemination of disease is shunted for chatter, sometimes of the most hysterical description, on the side-issue. Similarly anti-vaccination opposition has generally its starting point in one of the exceedingly rare cases where a specific blood contagion has been inoculated at the same time as the vaccine virus. The enormous masses of proof as to the value to the community of a universal method of protection from small-pox are not commented upon; the discussion rages round the side issue—the very infrequent occurrence of a sad accident. And now it would seem from the numerous articles and more or less badly-informed correspondence that have lately appeared in print, that the well-deserved reputation of Moses and his followers as sanitarians is to be made to depend upon the measure of cruelty employed in the slaughter of cattle required for Jewish meat. It is from this partial and unjust treatment that Dr. Adler's highly interesting address should effectually rescue the Jewish code. Much of the ground over which he went had been previously traversed by Sir Benjamin Ward Richardson and others, but the pronouncement of the official head of the Synagogue will give to the subject an importance in popular estimate that has hitherto been denied it.

Although the expression "cleanliness is next to godliness" has all the ring of one of the Wise King's aphorisms, so that, no doubt, many have tried to find it in Proverbs or Ecclesiastes, it is not Scriptural but Talmudic, occurring, as a paraphrase, in that part of the Jewish canonical law which is known as Mishnâh. But there can be no doubt that, in the eyes of Moses every whit as much as in those of his rabbinical successors, the kinship between the virtues was very close, and, indeed, the phrase might well have been placed above Leviticus and Deuteronomy as a kind of general text to the preaching of those books. And this fact was the gist of the earlier portion of Dr. Adler's address. The Pentateuch, he said, was intended to exercise a most direct sanitary influence on the children of Israel, and in proof of this he quoted one verse from Exodus which placed his contention beyond argument. It must be remembered, in order to appreciate the full force of the quotation, that the verse is to be found in a chapter following upon the description of the plague of boils and blains and the plague of cattle-murrain to which the Egyptians were subjected for their obstinacy. "And he (Moses) said, If thou wilt diligently hearken to the voice of the Lord thy God and wilt do that which is right in His sight, and wilt give ear to His commandments and keep all His statutes, I will put none of those diseases upon thee which I have brought upon the Egyptians, for I am the Lord that healeth thee" (Exodus, xv, 26). Clearly the law as Moses laid it down was to be obeyed as much on physical as on moral grounds, and, without going so far as Sir Benjamin Ward Richardson, who has been able to see sanitary provisions in each clause of the Decalogue, we can appreciate the undoubted fact that the practical side of the teaching of Moses was largely sanitary. As a proof of this we have but to look at the multitude and exactitude of his hygienic orders in comparison with his orders upon other matters. The Pentateuch at the time that it was written contained the law of the land—in fact, it *was* the law of the land; but we can discover in it only scanty provision for many of the emergencies that must have arisen even in the legal affairs of a nomad tribe. There is very little classification of offences, there is no division of them into civil or criminal ones, and there is but little attempt to make the punishment fit the crime. On the other hand, the provisions are as full in two directions as they are scanty in several others. The laws of religious ritual are elaborate, and the laws to enforce cleanliness and obviate infection are no less so; and—which is the noteworthy point—the two are inextricably bound up together. In Deuteronomy (c. xxiii.), for instance, we find, placed between the regulation for the admission of aliens to holy worship and those for granting shelter to fugitives, directions for the sanitary disposal of excreta. In Leviticus, again (cc. xi. to xiv. inclusive), we find regulations for the diagnosis, treatment, and prevention of leprosy and contagious venereal disorder, for the destruction of infected houses, and for the observance of a healthy diet placed between chapters dealing with the highest functions of the priests. And in order to confirm the connexion between cleanliness and godliness that is thus implied, we learn that the members of the tribe of Levi discharged the double duty of priests and sanitary officers. As a further illustration of the union in the Jewish code between sacred observance and personal hygiene Dr. Adler pointed to the command issued by Moses to the congregation, just before the Divine revelation on Mount Sinai, to "sanctify themselves by washing their clothes," and to entire chapters in Leviticus and Numbers which are devoted to injunctions bearing upon the cleansing of the person intermixed with the details of religious ritual. There can be no doubt that the Jews under Moses' direction were far in advance of the nations around them in sanitary matters, and that whoever kept the letter of the Mosaic law would enjoy immunity from infectious disease, as well as that high standard of health which results from personal care and cleanliness. In noticing the extraordinary precautions enjoined upon the children of Israel for the prevention of the spread of disease, Dr. Adler referred to the obscurity of the passages in Deuteronomy which deal with the "leprosy of houses," the houses in the walls of which there appear "hollow strakes, greenish or reddish." There was no obscurity about the

remedy; it was the drastic one of demolition if cleansing failed to purify the building; but what was exactly meant by the phrase—that is, what was exactly the condition of the walls that led to the red and green discolouration described in the text—has never been quite settled, and different commentators, Christian and rabbinical, have supplied different explanations. Possibly the words were only a poetical and picturesque way of insisting upon the fact that the dwelling-places of infected persons harboured infection and so became the means of spreading disease; but a more literal interpretation is just imaginable and from the preciseness with which the actual staining is described seems to be required. Where coincidentally with the presence of sickness in a house there is entire absence of ventilation and proper drainage, the walls of the house tend to become damp and discoloured, and their sticky surface will then offer an especially apt *nidus* or *matrix* for the shelter of bacteria. Our correspondent in Italy has pointed out that this condition prevailed in the cholera-infected houses at Leghorn,[1] and Dr. Mead has reported that during the Great Plague of London the walls of the rooms where the sick lay became discoloured green and red and that the houses where this occurred were especially infectious. It may have been that the Jewish law recognised that houses, in other ways entirely insanitary, were particularly likely to hold infection if they once became liable to it, and that the words of the text indicate the rough test by which the sanitary authorities (or Levites) might know whether purification by scraping and replastering should be persevered in, or whether nothing short of actual destruction would remove a source of infection from their midst.

Here the Chief Rabbi turned aside to consider the Mosaic and rabbinical regulations with respect to diet. He first reviewed the Mosaic restrictions and found that their chief reason was probably of a sanitary nature, and then went on to discuss the rabbinical directions for the slaughter of animals, which he defended strenuously from the popular accusations of inhumanity. The dietary restrictions of the Jews probably had their origin in three ideas. The first was that by making the children of Israel peculiar in their food a distinct barrier would at once be set up between them and the tribes around them. The peculiarity would give rise among them to an *esprit de corps* that would make them reluctant either to intermarry with or to subscribe to the religious exercise of races whom they would feel to be of a lower caste than themselves, and undistinguished by any divinely ordered customs. The second idea was that all arbitrary rules would conduce to habits of self-denial and obedience. The third was the exclusion of unwholesome food; and it was on this only that Dr. Adler expatiated. The restrictions laid upon the Jew by the Mosaic law are not very severe. The whole of the ruminant order of quadrupeds is open to him, and in this order he finds beef, veal, mutton, and venison—that is, the staple food of the rest of the world with the single exception of pork. Dr. Adler traced in the exclusion of the flesh of swine a distinctly sanitary purpose and alluded to the terrors of trichinosis; and there can be no doubt that the flesh of swine is more often the vehicle for the transmission of the trichina parasite than is the flesh of all other animals put together. Of birds the Jew is allowed to eat all but a few, and the prohibited species are those which nations free from restraint in the matter have almost universally decided not to feed upon. The carrion-birds—the *raptores* or *accipitres* (Cuvier)—which the Jew may not eat, have been discarded all over the world as food. That the carrion-feeder can transmit any of the poisonous elements of his unappetising *menu*, or become the host and distributor of any animal parasite, has, we believe, never been shown; but the possibility of such mishaps, together with a general recognition that the revolting is also the insanitary, probably dictated the exclusion of ravens, kites, crows, and their fellows. The pelican, the stork, and the heron, which also are prohibited birds, are not carrion-feeders, but a sanitary reason for withholding them from the national diet can be detected. These birds live chiefly upon fish, and their flesh is strongly tainted with a fishy odour that may disguise the warning smell of approaching decomposition; so that there is always a danger lest they may be eaten in an unwholesome or putrefactive state. It has been noted by commentators that all these birds, as well as the ibis, were objects of worship among the Egyptians, and it has been suggested that the Jews abstained from eating them out of a recollection of prejudices imbibed during their sojourn in the land of Egypt. There is no reason why both causes should not have operated in the mind of Moses when he marked them as prohibited. Most nations have endorsed the Mosaic restriction with regard to snakes, frogs, and toads. Possibly their sinister appearance, which certainly has determined their universal neglect as food, determined also their formal omission from the Jewish diet on the ground (to which allusion has been already made) that the unappetising is never completely nutritious. But a queer series of cases detailed in our issue of last week[2] shows that under certain circumstances frogs, at any rate, can be a most dangerous article of food. It appears that they can eat with impunity insects of the cantharides order, and that when themselves eaten they can give rise to the symptoms of cantharides poisoning. We do not suggest that this particular occurrence was foreseen and provided against by the Mosaic edict, but allude to it because it suggests a general sanitary reason for placing reptiles among the forbidden animals. It is possible to conceive that they are able to eat in security substances noxious to man and, if themselves eaten, to transmit the poison to him.

Dr. Adler brought his interesting lecture to a close by repudiating the accusation of cruelty against "Shechita," or the method of slaughter enjoined by rabbinical ritual. Having pointed out how entirely everything of the nature of cruelty to animals was at variance with both the word and the spirit of all Jewish teaching, he described at length the method employed by the Jewish slaughtermen and claimed for it that it was humane, swift, and cleanly; and he did not ask his hearers to receive his unsupported assurances, but he read the following testimony from Professor Rudolf Virchow to the accuracy of his statements. "As far as I possess knowledge," said the great pathologist, "concerning the mode of slaughtering cattle prescribed by the Jewish ritual, the method has been enjoined with the view of avoiding needless torture and of rendering the meat better adapted for human consumption by the entire removal of the blood. This object can be perfectly attained by means of the prescribed process. Indeed, if all the provisions of the ritual are fully observed—a circumstance which may be assuredly anticipated—it will be attained with greater certainty than by any other method. Hence, in my opinion, it cannot be asserted with any show of justice that the Jewish mode of slaughtering, in contradistinction to other methods, involves cruelty to animals."

Dr. Adler's eloquent championship of the Jewish code should go far to remove prejudices that have had their origin partly in the ignorance of the accusers, but partly in the backsliding of such a large number of his people. This latter he himself admits, and with our knowledge of the habits of the Russian, Polish, and German Jews, to say nothing of those of the Jews who multiply in the East-end of our own metropolis, we can see that he could not do otherwise. It is obvious that the possession of an admirable set of regulations will not keep a nation cleanly and healthy, although the observation of those regulations might do so.

[1] THE LANCET, Nov. 4th, 1893: Cholera in Italy.

THE INDUSTRIAL EMPLOYMENT OF WOMEN.

THE very copious report upon the conditions under which female industrial labour is carried on in the United Kingdom which has recently been issued by the Royal Commission on Labour shows that the evils of which women complain are, for the most part, those to which the labouring classes are subject without distinction of sex. Excessive hours of labour, insanitary conditions of life and irregularity of employment are the main substance of their complaints. In addition to these, they have to put up with an inferior rate of pay to that which male operatives secure, and they are said to be in some instances placed at a disadvantage from the circumstance of being placed under the supervision of fore-*men*. As a set-off to their lower rate of pay it must be borne in mind that, generally speaking, the woman's responsibility for dependants is more limited than that of the man, and that in many respects the women enjoy, as against men employed in the same trades, the advantage of having the less dangerous and less arduous part of the work to do.

[2] THE LANCET, Nov. 18th, 1893: Paris Correspondence.

Thus, in the match-making trade it seems to be the rule that the women do not enter the dipping room or come into contact with the phosphorus until it is more or less hardened after being manufactured into matches; and, indeed, although it is clear that women suffer much in many trades from excessive standing, there is in this report a noteworthy absence of evidence that the female industrial community suffers in any serious measure from injuries caused by machinery. Mishaps occurring to spinners from flying shuttles and to grinders from the fracture of emery wheels are exceptions to this rule, but the extent to which injury results from these causes does not appear to be sufficiently marked to invalidate or even seriously to impair the rule itself.

The mischief resulting from what is euphemistically called "favouritism" in this report is much more serious and undoubtedly affords ground for very grave complaint. It is explained as follows by Miss Orme: "It has been stated to me by several witnesses that women workers are very much at the mercy of the 'cutter' or the 'presser' as regards the amount of work given out to them in the various shops. I have received the following evidence on this point: Witness No. 140 complained that she had been obliged to leave a shop where she was employed owing to the familiarities of the 'cutter.' In consequence of her resenting these she was deprived of her fair share of the work given out and was finally obliged to leave because she did not get enough work to make a sufficient wage. On being questioned witness stated that cases of 'favouritism' are very common, and that in many instances the girls are entirely dependent on the 'cutter' as to the amount and profitableness of the work given out to them. For example, 'bound' vests, which are better paid, may be constantly given to those whom the 'cutter' favours, while others will be kept working on 'tweed' vests, which are paid at a lower rate." The evidence given by this witness is confirmed from a different district by Miss Abraham, who remarks concerning a factory in a northern town: "Favouritism very bad; two sons of the firm and overlookers have several illegitimate children by girls, employées in the factory."

On the other hand it is a pleasure to note many instances in which the lady inspectors are able to report very favourably upon the conditions of factory life, and it is noteworthy also that Miss Orme is able to speak in terms of by no means unqualified disapprobation of the lot of the barmaids. That as a rule the hours of labour are excessive in this industry, and that it opens the door to grave perils and abuses, goes without saying; but the inspector has evidently been impressed by much of the evidence given both by employers and employed to the general effect that in many cases special precautions are taken to guard against the mischiefs of the "bar." It is perhaps more surprising than really anomalous that an appreciable proportion of barmaids should be total abstainers, and the following extract from a barmaid's autobiography goes to show that a good heart will find a sphere of real usefulness in any and every condition of life: "For some years she served in a railway bar in a crowded seaport and made great efforts to persuade sailors to return home without going down into the town, where they would be sure to spend their money and get into bad hands. She was assisted by the stationmaster and by the Custom House officers, and they would bring sailors to her bar as they came off the ships. She would talk to these, and sometimes several would be collected in the refreshment-room, drinking sometimes beer and spirits in moderation, but very often coffee or cocoa. By finding out where they lived and when their trains started she often sent them home to their families with their money in their pockets."

The matter of this report is so multifarious that to summarise or even to characterise it adequately in a word is quite impossible. It will be found to teem with points of interest, and it may be said at least that if the labours of the inspectors have brought much misery, oppression, and necessity to light they have also revealed many agencies that work for righteousness, for happiness and for wellbeing in quarters where by the casual observer they are least suspected.

PRESENTATION.—Dr. C. J. Whitehead Dixon, who was recently appointed resident medical officer at the Royal Hospital for Chest Diseases, City-road, has, on leaving the Royal National Hospital, Ventnor, been presented by the staff with a very handsome repeating carriage clock as a mark of their regard and esteem.

THE ENGLISH LAKES AS SOURCES OF WATER-SUPPLY.

EARLY in the coming year it is contemplated that the water finding its way down the mountain sides into the valley of Thirlmere will be conducted a distance of about 100 miles, along aqueducts, pipes, and syphons, into the city of Manchester, and will there supplement the present scanty supply to the extent of some 10,000,000 gallons daily. Several times before this the Cumberland lakes have been regarded with a view to the appropriation of their contents by our large towns, but if we except the supply of Whitehaven from Ennerdale the honour of having first carried the idea into effect belongs to Manchester.

As early as 1865–6 a scheme was drawn up and subsequently laid before the Royal Commission on Water-Supply for bringing water from Ulleswater, Haweswater and Thirlmere to London. In that scheme it was proposed to raise the level of Thirlmere some 64 ft.; whereas under the present scheme Manchester is contenting itself with an elevation of the lake to 50 ft above its usual level. Again in 1875 Mr. Bateman, C.E., proposed a scheme for the joint supply of Manchester and Liverpool from the lakes of Ulleswater and Haweswater. That project, however, was eventually abandoned, with the result that Liverpool went to the Vyrnwy for its supply, and Manchester to Thirlmere. The interest and importance of the present Thirlmere scheme do not end with the supply of Manchester alone. In the passage of the Bill through the House of Commons the prospective requirements of towns on the course of the Manchester aqueduct were provided for. Under the Manchester Corporation Act Manchester is bound, after having first satisfied its own daily needs with the combined supplies of Longdendale and Thirlmere to the extent of twenty-five gallons per head, to supply with water such towns as Oldham, Wigan, St. Helens, Kendal, and Warrington upon their giving two years' notice to the Manchester corporation. The Thirlmere scheme thus assumes a vast national importance quite apart from the supply of Manchester itself.

The advantages of a pure, soft, and abundant water-supply are too well known and recognised to need comment here, but it may be of interest to examine whether any future proposal to obtain water from some other of our lakes is likely to meet with the opposition which the Thirlmere scheme did. The opposition in that instance is not altogether to be wondered at. The English lake-district is the holiday resort of thousands of our population, more especially of those whose lives are spent amid the smoke and din of our northern manufacturing centres. Further than this, its mountains and valleys, apart from their natural beauties, have been clothed with sentiment and poetry by writers of the highest order. All this appeared to be threatened at the hands of the Manchester corporation, and it is little to be wondered at that those who loved these things should rise up against the scheme. The inhabitants of the district objected, partly, no doubt, on the above grounds, but partly also at what appeared to be the threatened deterioration of the district as a holiday resort.

Now that the scheme is near its completion it is possible in some measure to judge how far the prophesies of the disfigurement of the country have been realised. It was urged by the opposition that the aqueduct which was to carry the water from Thirlmere through the lake district would permanently disfigure the mountain sides. As regards this part of the work it may be said that it is only with difficulty that the course of the aqueduct can be detected even when attention is drawn to it, and we believe that the same difficulty obtains in discovering the course of the new Liverpool aqueduct from Vyrnwy. As the level of the lake itself

has not yet been raised, it is only possible to conjecture on the change it will occasion in the scenery, but it may be said that the chief objection urged against this part of the scheme—namely, that in the time of drought large areas of the foreshore on either side of the lake will be exposed—is not likely to be realised, since the fluctuations of level will be no more than they are at the present time.

As regards the dam at the St. John's Vale end of the lake, it must be said that, although it is far from being an unsightly object, it will be some time before it rivals, as some of the more enthusiastic supporters of the scheme seem to have imagined, the beauties of the Eagles' Crag. Still, the dam is not visible from the eastern side of the lake, along which the coaches run, and only for a very short distance from the new road which the Manchester corporation is making along the western side.

It may be said, we think, that, if the same precautions are always taken as were taken at Thirlmere by the combined action of the public, the Select Committee of the House of Commons, the corporation of Manchester and the Thirlmere Defence Association, the acquirement of our lakes by wealthy corporations, or by amalgamated corporations, is a thing to be rather desired than the reverse. As things stand at the present time at Thirlmere the whole valley is secured for ever against the intrusions of the speculative builder and the devastation of the miner and quarryman; while the water of the lake is to be spared the disfigurement and pollution of mining effluents, such, for instance, as occur at Ulleswater and Coniston. The wants of Manchester are now met for many years to come, for the first instalment of 10,000,000 gallons daily is but one-fifth of the amount arranged for and which the permanent cutting is capable of carrying. It is intended at first to raise the water-level in the lake by only 20 ft., and the further elevation will only take place when the increased demands of Manchester and other places on the line of the aqueduct render it necessary. The present elevation of Thirlmere is 533 ft. above ordnance datum, and this will enable Manchester to be supplied entirely by gravitation. Ulleswater and Haweswater and some of the other lakes could be similarly utilised; but the water of Windermere, situated as it is but 134 ft. above ordnance level, would have to be pumped up for the supply of a town of any elevation.

THE RIO TINTO COMPANY'S HOSPITALS IN SPAIN.

BY W. A. MACKAY, M.D. EDIN.

A BRIEF account of two hospitals erected in Spain by a well-known English company will perhaps interest a considerable number of the readers of THE LANCET. These hospitals which have sprung up in the wake of English commerce have already had some influence on a forward movement in the construction of hospitals which can now be distinctly perceived in certain parts of the peninsula. The Huelva Hospital was built in 1884 by the Rio Tinto Company solely for the benefit of their employés, and is therefore a private hospital. But the privilege of admission has since been extended to seamen visiting the port of Huelva, and a great boon has thus been conferred on a class of men exposed to special dangers, whose sufferings when ill in a foreign port are but little realised. Until this privilege they had been obliged to choose between their own homes and the Spanish Provincial Hospital. On this latter building I reported in 1883 to the board of the Rio Tinto Company as follows: "Its walls are lined with the germs of erysipelas and hospital gangrene. Medical and surgical cases are crowded together, so that it is not possible to pass between two beds without touching both. The amount of cubic feet of air per head is one-third of the minimum allowed in modern hospitals. Small windows, placed near the roof, and clammy walls complete the picture of a mediæval prison." The consideration of the terrible condition of the Spanish hospital led the Rio Tinto Company to erect the building to which I have referred. I am entirely responsible for the plan and construction of this hospital. It has recently been enlarged by the addition of an upper storey over the central block. This new storey is fitted up for medical patients, and the two wards on the ground floor are now occupied by surgical cases. The patients are under the care of an English matron and an English nurse, assisted by a Spanish house surgeon and Spanish nurses, the latter of whom readily proved themselves to be capable in the performance of their duties. The hospital stands in its own grounds just outside the town, and is surrounded by gardens and vineyards. The wards are each 44 ft. by 22 ft., and are raised one metre from the ground, with abundant ventilation. The closets are arranged on the dry earth system, and a sanitary cart permits of a daily removal of all refuse. There is no drain anywhere near the building. Eight years' work in this hospital has proved it to be well adapted to the climate of Southern Spain. The other hospital, built by the company at their mines at Rio Tinto fifty miles inland from the seaport of Huelva, was constructed to contain 44 beds, to meet the accidents occurring amongst 12,000 workmen. The main body of the Mines Hospital, as it now stands, represents the reconstruction and enlargement of a former building. The plan of this hospital was drawn up by Mr. James Osborne, consulting engineer to the company, and the details of ventilation were worked out by Mr. Raymond Courteen, chief medical officer. When it is stated that the shade temperature for August averaged nearly 100° F., going up to 108° on the hottest day, while the winter is cold, it will be seen that special knowledge was needed to construct a hospital suitable to this locality. The building was completed in 1892, and in summer it is the coolest place in the district. I found that the temperature on the hottest days in August did not exceed 85° in the wards, while in winter an open fireplace at one end of the ward and a specially constructed stove at the other, with a pipe running along the roof and Tobins shafts in the walls, give ample renewal of warm air. This hospital is free from drains, although the water-supply is abundant. Sanitary carts remove refuse from all the company's buildings. The Mines Hospital is proving itself most satisfactory. The treatment of injuries of the first magnitude carried out by the medical officers, Mr. R. Courteen and Dr. R. Russell Ross, gives results which can only be obtained by modern surgery under most favourable conditions.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Lancashire County Sanitary District.—The sanitary condition of the administrative county of Lancashire, with its population of 1,768,273, possesses an importance, from the point of view of the country's health second to no other county in England. The county includes eighteen boroughs, ninety-four local boards and twenty-two rural sanitary districts. The general death-rate for the urban districts was 19·34 and for the rural 17·31 per 1000. The infantile mortality of the urban districts was 155 per 1000 births, and that of the rural 124. Mr. Edward Sergeant points to the danger to infant life caused by the mill-workers taking their children in all weathers to a neighbour's house to be nursed. There was during 1892 an extensive outbreak of small-pox in Chadderton, which Mr. Sergeant states "seems to have been acquired by aërial infection carried from the Westhulme Hospital, belonging to the Oldham corporation, and which is situated within 100 yards of the houses first infected at Chadderton." Tramps seem to have played their usual part in diffusing small-pox over Lancashire, as over other counties, and Mr. Sergeant points to the necessity of increased powers for county councils and sanitary authorities in dealing with these social pests. Compulsory revaccination seems to us to be the most practical method of dealing with the difficulty. In thirteen districts in Lancashire measles is added to the list of notifiable diseases, in two chicken-pox, and in five whooping-cough. There were several outbreaks of enteric fever

throughout the district, and some were apparently caused by polluted water. At Ashton-in-Makerfield the filter beds were of insufficient size, and most of the water was consequently delivered unfiltered. Isolation provision is still, Mr. Sergeant tells us, totally inadequate for the requirements of the county, and he is of opinion that the Infectious Diseases Hospitals Bill should provide for the establishment of special small-pox hospitals. In regard to river pollution some very good work appears to have been done during 1892 by the Mersey and Irwell, as also by the Ribble, Joint Committee. The committees first attempted to deal with pollution by means of persuasion, but when this failed legal proceedings were instituted, with satisfactory results. Mr. Sergeant's report contains a map showing, by means of differently coloured dots, the distribution of the several trade pollutions.

Staffordshire County Sanitary District.—Dr. George Reid's method of summarising the annual reports of the district medical officers of health differs from that of some of his colleagues, inasmuch as he discusses each subject separately, and at the same time summarises those parts of the several reports which bear upon the subject. Dr. Reid supplies a capital index by means of which all the information with reference to any sanitary district can easily be found, and in addition to this there is a short tabulated summary of each district in the end of the report. The estimated population of the district to the middle of 1892 was 781,651; the general death-rate in the urban district was 19·2, and in the rural 17·9 per 1000. The subject of infantile mortality is one in which Dr. Reid has taken much interest, and it is also one which his own district unfortunately provides him with ample material for study. In six of the urban districts in Staffordshire the infantile mortality exceeded 200 per 1000 births. This excessive mortality is referred to by many of the district medical officers of health; but all seem to agree as to the enormous part played by female labour in its production. Mr. Beasley of Rowley Regis refers to the profound disbelief which the more ignorant classes have in the possibility of infection or contagion, and this scepticism is no doubt a very important factor in the spread of infectious disease. Mr. Marsh Jackson of Smethwick goes deeply into the subject of infantile mortality, and remarks, amongst other things, that "under existing social circumstances it must be granted that there is a place in the community for the baby caretaker," and he advocates more supervision and control of this individual. He suggests that such persons should obtain a licence from the sanitary authority and that at stated intervals all children entrusted to the caretaker's charge should be brought up for examination by the medical officer of health. In reference to the subject of female labour as influencing infantile mortality Dr. Reid gives the following figures:—

Deaths in Children under one year of age in Three Classes of Artisan Towns in Staffordshire.

—	Class I. Many women engaged in work.	Class II. Fewer women engaged in work.	Class III. Practically no women engaged in work.
Ten years 1881-90 ..	195	166	152
Four years 1889-92 ..	196	173	160

Amongst the infectious diseases we notice that a case of small-pox was believed by the district medical officer of health to have been contracted through the agency of an infected letter or parcel, and a case of diphtheria was regarded as having arisen from some fowls which were suffering from fowl diphtheria. Since Dr. Reid's last report six sanitary authorities have adopted the Notification Act, and the report under review contains an interesting map showing the hospital and disinfecting provision in the county. There is evidently plenty of room for improvement in these respects.

Chester County Sanitary District.—The general death-rate of the several districts in this administrative county varied from 25·1 in the borough of Macclesfield to 9·4 per 1000 in Bowdon. The infantile mortality showed a wide range—viz., from 246 per 1000 births in Dukinfield to 29 per 1000 in Whitchurch. In criticising the several district reports Mr. Francis Vacher, the county medical officer of health, points out that in the various reports more information should be given with regard to vaccination when dealing with the subject of small-pox. In treating of diphtheria and croup Mr. Vacher records instances where the notification did not agree with the opinion of the district medical officer of health. The report, however, does not state whether in these instances the medical officer of health was invited by the medical practitioner to see the cases and examine their throats, or whether the medical officer of health considered it to be part of his duty to verify the medical certificate. It appears that a considerable number of the cases of enteric fever which occurred in the Wirral district during the year were imported from Liverpool. The notification of erysipelas seems to be somewhat imperfectly carried out in some of the districts, and Mr. Vacher mentions the case of Macclesfield, where there were four deaths but no notifications. With the exception of five sanitary authorities in the county, all have now adopted the Notification Act, but in none of the districts have any other diseases been added to the usual list. The isolation accommodation is described in the report as being "wholly inadequate to meet the requirements of the administrative county," and very little seems to be contemplated by the various sanitary authorities in order to improve matters. Adoptive Acts are apparently not popular in Cheshire, as, with the exception of the Chester rural authority, no district has adopted the Infectious Diseases (Prevention) Act, 1890, and only two sanitary authorities, including Chester rural, seem to have adopted the Public Health Acts Amendment Act, 1890. Bakehouses are much neglected in the county, and only ten of fifty-four reports make reference to them. Some activity seems to have been displayed throughout the county in the matters of water-supply and sewerage. Mr. Vacher has evidently ample material to effect improvement upon.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 5977 births and 4751 deaths were registered during the week ending Nov. 18th. The annual rate of mortality in these towns, which had increased in the preceding three weeks from 18·3 to 21·5 per 1000, further rose last week to 24·0. In London the rate was 24·4 per 1000, while it averaged 23·7 in the thirty-two provincial towns. The lowest rates in these towns were 10·8 in Halifax, 11·0 in Croydon, 16·6 in Huddersfield, 16·8 in Nottingham, and 17·1 in Portsmouth; the highest rates were 27·5 in Oldham, 28·8 in Liverpool, 29·3 in Bolton, 29·7 in Wolverhampton, and 31·4 in Birmingham. The 4751 deaths included 513 which were referred to the principal zymotic diseases, against 458 and 508 in the preceding two weeks; of these, 117 resulted from diphtheria, 92 from whooping-cough, 85 from measles, 77 from scarlet fever, 62 from diarrhœa, 61 from "fever" (principally enteric), and 19 from small-pox. No fatal case of any of these diseases occurred last week in Halifax; in the other towns they caused the lowest death-rates in Portsmouth, Derby, Preston and Blackburn, and the highest rates in London, West Ham, Norwich, Bradford and Hull. The greatest mortality from measles occurred in Norwich; from scarlet fever in Sunderland; from whooping-cough in Birkenhead and West Ham; from "fever" in Liverpool and Hull; and from diarrhœa in Burnley. The 117 deaths from diphtheria included 91 in London, 3 in West Ham, 3 in Bristol, 3 in Manchester, and 3 in Salford. Eight fatal cases of small-pox were registered in Bradford, 4 in Birmingham, 2 in Bristol, and 1 each in London, West Ham, Leicester, Oldham and Leeds, but not one in any other of the thirty-three large towns. There were 151 small-pox patients under treatment in the Metropolitan Asylum Hospitals and in the Highgate Small-pox Hospital on Saturday last, the 18th inst., against 87, 110, and 150 at the end of the preceding three weeks; 20 new cases were admitted during the week, against 30 and 52 in the preceding two weeks. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital at the end of the week was 3129, against 2778, 2906, and 3071 on the preceding three Saturdays; 363 new cases were admitted during the week, against 401, 460, and 484 in the preceding three weeks. The deaths referred to diseases of the respiratory organs in London, which had increased from 271 to 410 in the preceding three weeks, further rose to 615 last week, and were 196 above the corrected average. The causes of

105, or 2·2 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Brighton, Cardiff, Leeds, Sunderland, and in seven other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Leicester, Liverpool, and Hull.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had increased from 18·2 to 20·3 per 1000 in the preceding three weeks, further rose to 24·3 during the week ending Nov. 18th, and was 0·3 per 1000 above the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 18·5 in Dundee and 21·7 in Aberdeen to 28·6 in Paisley and 36·0 in Perth. The 684 deaths in these towns included 27 which were referred to whooping-cough, 12 to scarlet fever, 11 to diphtheria, 10 to diarrhœa, 6 to "fever," 1 to measles, and 1 to small-pox. In all, 68 deaths resulted from these principal zymotic diseases, against 52 and 61 in the preceding two weeks. These 68 deaths were equal to an annual rate of 2·4 per 1000, which was slightly below the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of whooping-cough, which had increased from 9 to 19 in the preceding three weeks, further rose to 27 last week, of which 19 occurred in Glasgow and 4 in Edinburgh. The deaths referred to scarlet fever, which had been 5 and 10 in the preceding two weeks, further increased to 12 last week, of which 7 occurred in Glasgow. The 11 fatal cases of diphtheria corresponded with the number in the preceding week, and included 3 in Aberdeen, 2 in Glasgow, and 2 in Dundee. The deaths referred to different forms of "fever," which had been 5 and 7 in the preceding two weeks, were 6 last week, of which 2 occurred in Glasgow and 2 in Dundee. The fatal case of small-pox was recorded in Leith. The deaths referred to diseases of the respiratory organs in these towns, which had been 103 and 141 in the preceding two weeks, further rose to 212 last week, and exceeded by so many as 75 the number in the corresponding week of last year. The causes of 60, or nearly 9 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 26·8 and 26·7 per 1000 in the preceding two weeks, rose again to 27·6 during the week ending Nov. 18th. During the past seven weeks of the current quarter the death-rate in the city has averaged 24·9 per 1000, against 19·8 in London and 19·4 in Edinburgh. The 185 deaths in Dublin during the week under notice showed an increase of 6 upon the number in the previous week and included 16 which were referred to the principal zymotic diseases, against 27 and 19 in the preceding two weeks; of these, 6 resulted from whooping-cough, 3 from "fever," 3 from diarrhœa, 2 from measles, 2 from diphtheria, and not one from small-pox or scarlet fever. These 16 deaths were equal to an annual rate of 2·4 per 1000, the zymotic death-rate during the same period being 3·2 in London and 2·0 in Edinburgh. The fatal cases of whooping-cough, which had been 2 and 8 in the preceding two weeks, declined again to 6 last week. The deaths referred to different forms of "fever," which had been 10 and 4 in the preceding two weeks, further declined to 3 last week, a smaller number than in any week since August last. The 3 fatal cases of diarrhœa also showed a further decline from recent weekly numbers. The 185 deaths registered in Dublin last week included 27 of infants under one year of age and 46 of persons aged upwards of sixty years; the deaths of infants corresponded with those recorded in the preceding week, while those of elderly persons exceeded the number in any recent week. Five inquest cases and 2 deaths from violence were registered; and 54, or nearly a third, of the deaths occurred in public institutions. The causes of 19, or more than 10 per cent., of the deaths in the city last week were not certified.

FOOTBALL FATALITY.—A youth aged eighteen years, of Normanby, near Middlesbrough, has died from injuries sustained on 11th inst. during a match between Normanby and the Acklam Swifts.

THE SERVICES.

SURGEON-MAJOR POWELL and Surgeon-Captains Hosie and Whaite have reported their arrival from India on completion of a tour of foreign service. The following officers have received orders to embark for India in the *Malabar:* Surgeon-Colonel Gore, Surgeon-Lieutenant-Colonel Thomsett, Surgeon-Major Carleton, Surgeon-Captains Way, Fitzgerald, Tyacke, and Healy. Surgeon-Captain Long has reported his arrival in England after a tour of service on the West Coast of Africa. Surgeon-Captain Pinching, Egyptian Army, has re-embarked for Egypt on termination of leave. Surgeon-Lieutenant-Colonel Kirwan has been posted to the North-Eastern District. Surgeon-Major Coates has been transferred to Cork, and Surgeon-Captain Shine has arrived in Malta. The following officers have rejoined their several stations from leave of absence: Surgeon-Major-General Wade, Brigade-Surgeon-Lieutenant-Colonel Mackinnon, and Surgeon-Majors Ellis and Cree, Aldershot; Surgeon-Lieutenant McNaught, Curragh, and Surgeon-Lieutenant Mansfield, Eastern District. At Netley Surgeon-Lieutenant L. P. Moore is transferred from No. 5 Company to No. 4 Company, Medical Staff Corps, for duty. Under the authority of the Director-General, A.M.D., Surgeon-Captain D. Semple has been relieved of the command and pay duties of No. 4 Company, Medical Staff Corps, by Surgeon-Captain G. Cree.

MOVEMENTS IN THE MEDICAL STAFF.

The next examination for admission to the Army Medical Staff will be held at the Medical Hall, Victoria Embankment, on Feb. 9th next and following days.

INDIA AND THE INDIAN MEDICAL SERVICES.

The following appointments are announced: Brigade-Surgeon-Lieutenant-Colonel T. Ffrench Mullen, M.D., I.M.S. (Bengal), Civil Surgeon of Bikanir, to officiate as Residency Surgeon in the Western States of Rajputana until further orders. Surgeon-Major H. N. V. Harington, I.M.S. (Madras), Medical Officer of the Deoli Irregular Force, and of the Haraoti and Tonk Pol Agency, on being relieved of his appointment as Officiating Agency Surgeon in Ulwar to officiate as Civil Surgeon of Bikanir. Surgeon-Captain J. Chaytor-White, M.B., I.M.S. (Bengal), on being relieved of his appointment as Officiating Civil Surgeon of Ajmere, and Officiating Medical Officer of the Merwara Battalion, reappointed to officiate as Medical Officer of the Meywar Bhil Corps. Brigade-Surgeon-Lieutenant-Colonel Lethbridge has resumed Charge of the Thagi and Dacoity Department on return from England. The following postings and transfers of Medical Officers are ordered: Surgeon-Lieutenant-Colonel H. Johnstone to be Civil Surgeon, Rangoon; Surgeon-Major S. H. Dantra, Officiating Civil Surgeon, Rangoon, to revert to his substantive appointment of Junior Civil Surgeon, Rangoon; Surgeon-Captain J. H. Sellick, Officiating Junior Civil Surgeon, Rangoon, to be Civil Surgeon, Myingyan, and Surgeon-Captain R. H. Castor, Civil Surgeon, Myingyan, to be Civil Surgeon, Yamethin. Surgeon-Colonel Harvey, now discharging the duties of Surgeon to the Viceroy, will take up the post of Inspector-General of Civil Hospitals in Bengal. Surgeon-Colonel A. A. Gore, A.M.S., has been appointed an Administrative Medical Officer in the Bombay Presidency, in succession to Surgeon-Colonel J. Davis, Principal Medical Officer, Mhow District, who has been selected for the appointment of Principal Medical Officer, Madras Army. Surgeon-Captain S. E. Prall has received Charge of the Shikarpur Gaol. Surgeon-Captain W. H. M. Ingham, I.M.S., has been transferred to the permanent half-pay list. Surgeon-Major A. Watt, Sappers and Miners, Bengal, is promoted to the rank of Conductor in succession to Conductor J. Macqueen, transferred to the pension establishment.

NAVAL MEDICAL SERVICES.

The following appointments are announced: Fleet-Surgeon George B. Murray to the *Resolution* (Dec. 5th). Staff-Surgeons: A. H. Miller to the *Audacious* (Dec. 28th); J. J. Dinnis, to the *Inflexible* (Dec. 5th). Surgeons: C. Alsop, to the Malta Hospital (Nov. 15th), H. Harries, to the *Melita* (Nov. 15th); P. Bassett-Smith, to the Royal Marine Division, Plymouth (Nov. 15th); J. C. Durston, H. N. Stephens, E. A. Rogers, G. D. B. Levick, M. C. Langford, P. H. Boydon, A. H. Jeremy, M.B., J. P. Willis, M.B., W. R. Knightley, J. W. W. Stanton, A. Gaskell, and T. D. Halahan, to the Haslar Hospital (all Nov. 25th); Charles Facey, to the

Resolution, and Francis H. A. Clayton, to the *Superb* (to date Dec. 5th); and George D. Trevor-Roper, to the *Mohawk* (to date Dec. 1st).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major Andrew Clark to be Surgeon-Lieutenant-Colonel; Surgeon-Major Samuel Smith to be Surgeon-Lieutenant-Colonel; and Surgeon-Captain Robert Wm. Edginton, M.D., 1st Worcestershire and Warwickshire Volunteer Artillery, to be Surgeon-Major.

VOLUNTEER CORPS

Fortress and Railway Forces (Royal Engineers): 1st Gloucestershire: Surgeon-Lieutenant W. Cox to be Surgeon-Captain.—*Rifle*: 2nd Volunteer Battalion, the Sherwood Foresters (Derbyshire Regiment): William Tweed Hannah, M.B., to be Surgeon-Lieutenant.

SURGEON TO THE VICEROY OF INDIA.

The Earl of Elgin has appointed Surgeon-Major Franklin, I.M.S., as Surgeon to serve upon the Viceregal Staff.

OUR MILITARY EDUCATIONAL INSTITUTIONS.

The reports of the Board of Visitors to the Royal Military College at Sandhurst and the Royal Military Academy, Woolwich, just published, will not prove altogether pleasant reading for those concerned. The Board of Visitors evidently made a minute and thorough inspection of these establishments. They comment adversely upon several points connected with the system in force at Sandhurst, more particularly the extravagant conduct of the mess, the entertainments called "gymkhanas," the insufficient time devoted to study, and other matters. As regards the appearance and health of the cadets and the sanitary condition of the College the report is, however, quite satisfactory. The Board of Visitors report, on the other hand, that they are quite satisfied with the mess system at Woolwich, but they again call attention to the insufficient and bad hospital accommodation provided for the cadets at the Royal Military Academy, to various points connected with some of the equipment supplied to the institution for instruction purposes, and to the course of study pursued at the Academy. The health of the cadets was very good.

The following gentlemen who competed at the examination held on Nov. 6th and following days at Examination Hall, Victoria Embankment, for appointment as Surgeon in the Royal Navy, have been successful: J. P. Willis, 2952 marks; W. R. Knightley, 2692; J. W. W. Stanton, 2663; A. Gaskell, 2622; T. D. Halahan, 2448; J. C. Durston, 2418; H. N. Stephens, 2401; E. A. Rogers, 2398; G. D. B. Levick, 2317; and M. C. Langford, 2246.

H.M.S. *Euphrates* sailed from Bombay on the 4th inst. with ninety invalids for Netley.

Correspondence.

"Audi alteram partem."

THE PRESENT EXAMINATION SYSTEM.

To the Editors of THE LANCET.

SIRS,—The large and increasing proportion of rejections is at last attracting attention. When we reflect on the fact that rejections have run up to some 30 per cent. of the examined—twice what the proportion was twenty years ago, three times what it was thirty years ago—it goes without saying that there is something wrong in the present system of examination, or in the teaching, or in their relation to each other. It is not the student's blame. He is not less industrious than when I knew him twenty, thirty or fifty years ago. The views of one who has had experience in teaching and in examining and who is free to speak may perhaps be of some use at the present time.

I believe that the present system of examination fails seriously to secure the desired results, and that it is injurious to good medical education. The education is the main thing, but the education is regulated by the examinations, more and more so as these are multiplied. Using the word "cramming" deliberately, I hold that the present examination system leads to and rewards cramming; that it does so (*a*) by the multiplication of examinations, and (*b*) by wrong method at the examinations.

(*a*) I am not here suggesting any departure from the general recommendation made by the General Medical Council, and adopted by the various examining bodies, that there should, in the new five-year course, be four examinations. The evil lies in the boards having allowed subdivision of these four examinations, and in intervals between the four examinations not having been prescribed. The result is that the candidate may take the examinations bit by bit, one subject at a time, for which he crams.

Thus, under the regulations of the Conjoint Board, the first examination may be taken in England in four parts at different times, in Scotland in three parts, the third examination at both boards in three parts, and the fourth examination in four parts at the Scotch Board. For each of these bit-by-bit examinations the student crams up, and the teaching has to be shaped accordingly; student life consists not in studying to know his profession, but in the distractions of preparing for this or that bit of examination, and the teacher has too commonly fallen to the rank of a "grinder."

The evil of the bit-by-bit system comes out most manifestly in the examination in medicine, surgery, and midwifery being allowed to be taken in three parts at different times. Of what real value is the kind of surgical or medical or obstetric knowledge that the candidate could not carry in his head, or prove with his hands, beyond the three or the six or more months that may intervene between the first, the second and the third bits of the examination? It is the examination for the general practitioner, and the aim of the examination should be to test the man's whole fitness to practise his profession. The permission to take the preliminary examination bit by bit led to such abuse that we had to put a summary stop to it and require the whole to be passed at one time. The four examinations already give as much subdivision of the professional examination as ought to be allowed; I would say they are one too many unless the fourth is to be strictly clinical. It belongs to the schools to see that their students take the classes in the proper order, and to each teacher to see that his students are working. The object in the examinations held by a licensing board should be to test, not what the student can cram, but, after due time allowed for study, to test what he has retained.

While thus criticising the regulations of the London Conjoint Board in regard to the bit-by-bit system, towards which they appear to stand *in loco parentis*, I would ask the consideration of other boards to two admirable rules in these regulations: 1. Intervals are prescribed between the four examinations; six months between the last bit of the first examination and admission to the second; two years between the second and third examinations; and a year between the third and the final examination. 2. This final examination is exclusively a clinical examination in medicine and surgery, and in midwifery and gynæcology if that subject has not been taken with the previous general examination in medicine and surgery and allied subjects at the end of the fourth year. It is the only board, so far as I am aware, that has ensured the carrying out of the recommendation of the General Medical Council that the fifth year should be devoted to clinical work at hospitals or dispensaries or, it may be, half of it spent in pupilage with a practitioner. Except in regard to a weakness in securing efficient teaching in the auxiliary sciences (at present a question for the General Medical Council to deal with), and except in regard to the bit-by-bit system, which may be easily dropped, I would hold up the regulations of the English Conjoint Board as typical; as on the whole the best we have in the United Kingdom, those of no university excepted, for producing the best article for admission to the medical profession. The special points of merit are the compulsory intervals, and, by the last of these, securing the fifth year exclusively for practical work.

(*b*) Still more injurious to education and futile in results I hold to be the present method of conducting the examinations. Far too much importance is attached to the written part. What we wish is real knowledge, not merely word knowledge. Written examination, so far as I could learn, is not employed in medical examinations in France or in Germany, and is of comparatively modern use in this country. It has grown vastly at some boards, and much might be said as to its baneful antecedent influence on the teaching. Long experience in teaching and in examining at various boards has taught me to attach little weight to written examination. It has the seductive recommendation of saving the time of the examiners. I would continue it for that purpose in a

different sense, using it as eliminatory in cases in which it affords abundant evidence that it would be a waste of the time of the examiners to send the candidate on to the oral examination. The practice of taking a mean, allowing good marks for the paper to make up for bad marks at the oral and practical, ought to cease. The pass mark should be required to be reached at the oral and practical part or parts.

But what I desire to insist on most of all is, that the so-called oral examination ought to be more demonstrative or practical, and have more time allowed for it, than is customary at most boards The modern oral examinations appear to be suffering from the same incompatibilities as the modern teaching. Under the influence of the modern wave, the demand for real instead of word knowledge, there have been added so-called practical classes (some of them not very practical), but without abatement of the old over-lecturing. The student is pulled about from class to class in distraction, but on the whole finds his safety in looking to the old. So in the oral examinations there has been the introduction of the objective and the practical to some extent here and there, sometimes real, sometimes only in appearance, but the new wine has not been in quantity sufficient to burst the old bottles. Examiners trained in the old way go on mainly in the old way, and, still more disappointing, the young examiner too, fresh from the cramming school, takes the talking way. What I plead for is an entire reform in method at the oral examinations, for what may be called the laboratory and bedside method all round, and for ample time to be given to it.

If the regulations and recommendations made by the General Medical Council in enacting and planning, in 1890, the new five-year course are looked at, it will be seen that, whether in regard to education or examination, what I plead for is arranged and foreshadowed, leaving it to the examining boards to fill up the framework. Thirty-five long years have come and gone since the Medical Act of 1858 was passed to enable us to produce persons having "the requisite knowledge and skill for the efficient practice of their profession," and yet we are far from having found a perfect way of reaching that goal. Some think we never shall till some kind of State examination is set up. Life is full of disillusions and perhaps we were wrong in not taking that view years ago—a State examination either of a practical kind or also of the nature of a general review examination. I, for one, have no wish to see a King Stork swallow up all our examining bodies, but less of King Log, in the shape of more power to the General Medical Council, is desirable; but that would mean a medical Bill, and no man who lived through the thirty years' war of the medical Bills can desire to live to see another. Is it too much to hope that at least the three Conjoint Boards, with their flexible machinery, will now set themselves in earnest to carry out to the full these behests of the General Medical Council?

Our aim in regard to education should be to promote practical study in all the branches, training the rising youth to observe nature for themselves, nature in the laboratories, the dissecting room, the post-mortem room, and at the bedside, and to cultivate the open mind for progress that is sure to be made in our ever-advancing sciences and art. Our aim in regard to the indispensable evil of examinations should be to test such knowledge.—I am, Sirs, yours faithfully,

Edinburgh, Nov. 18th, 1893. JOHN STRUTHERS.

"PUERPERAL SEPTICÆMIA."

To the Editors of THE LANCET.

SIRS,—Will you permit me to make one or two observations on the discussion which took place at the last meeting of the Obstetrical Society on puerperal septicæmia? I much regret that I was unable to be present, since views were expressed by several eminent authorities which I should have liked to controvert on the spot—views which seem to me to be exceedingly unsound, and likely, if generally adopted, to lead to a dangerous neglect of necessary precautions. Before commenting on these I should wish to defend myself from the charge of uncertain teaching which you bring against me in your leading article on the subject in THE LANCET of Nov. 18th, in which you say: "Some confusion and even contradiction are to be met with in the advice given as to what is a practitioner's duty in the circumstances under consideration. Thus, in the last edition of Dr. Playfair's 'Midwifery' the writer says: 'I can scarcely conceive any case in which the risk of infection cannot be prevented by proper care.' Yet on the same page the following passage occurs: 'When, however, a practitioner is in actual and constant attendance on a case of puerperal septicæmia, when he is visiting the patient many times a day, especially if he be himself washing out the uterus with antiseptic lotions, it is certain that he cannot deliver other patients with safety, and he should secure the assistance of a brother practitioner.'" I cannot admit that these passages indicate "confusion and even contradiction." One may hold, as I do, that rigid antisepsis is capable of destroying most contagia, and yet recommend as a judicious precaution that actual attendance on labours should be avoided when the hands are being constantly imbued with infective material of deadly potency, as in the case indicated. No harm can follow excessive care, and I contend that the recommendation you quote does not err on the side of needless caution. What I particularly wish now to draw attention to is the statement made by the President of the Society, Dr. Herman, that defective sanitary conditions are not matters of importance in the causation of puerperal disease. He is reported to have said that "he knew of no evidence that the relation between the drainage and the illness was anything more than one of coincidence." Dr. Cullingworth goes even farther, and makes the amazing assertion that it is "a very dangerous doctrine to propagate that puerperal septicæmia could be caused by defective drains and sewer emanations. There was no evidence that would bear criticism in favour of such a view, and to preach such a doctrine was to divert attention from the point of real importance, which was personal cleanliness on the part of all around the patient." These are very serious assertions to be made on the authority of two eminent physicians, both of whom are teachers of midwifery, and I must respectfully characterise them as extremely pernicious. I say so partly because all teaching that is untrue is pernicious, but more so because, if such authoritative dicta were generally admitted to be correct, the causation of many important cases of puerperal disease would be overlooked, the only rational remedy would be neglected, and valuable lives would certainly be sacrificed. When my friends Drs. Herman and Cullingworth say that they know of no evidence to show that defective sanitation is a cause of puerperal disease I am forced to conclude that they have not done me the honour of reading a paper of mine, published in THE LANCET of Feb. 5th, 1887, on Defective Sanitation as a Cause of Puerperal Disease; and if they or any of your readers will refer to it they will find, not only a good deal of evidence in proof of the evil effects of bad sanitation, but some which I maintain is absolutely conclusive. I cannot trespass on your space by asking you to publish any of the cases there related, but I will specially refer to one, which is republished, with an illustrative diagram showing the course of the currents of sewer gas, on pages 361-2, vol. ii., of the latest edition of my book on midwifery. I will just quote what I say at the end of that case: "Now mark how thoroughly and curiously these facts prove the cause of the disease. The patient lay in the bed at C, which from the accident of its being winter and the current of sewer gas being drawn, therefore, to the chimney (as proved by the smoke test), was quite out of its reach, and for the first ten days after her confinement, while she remained in bed, she was perfectly well. On the eleventh day, when she got up, she was placed directly in the currents of sewer gas at D and instantly got poisoned. On the twelfth and thirteenth days she was again exposed to the absorption of further and more intense poisoning at E; while immediately on her removal to fresh and uncontaminated air all her threatening symptoms disappeared. It seems to me that this instructive history is about as complete a demonstration of the origin of puerperal disease from defective sanitation as anyone could possibly desire, and I can see no flaw in the chain of evidence."

Now I challenge Drs. Herman and Cullingworth to read that case carefully and then explain how it could possibly have been produced in any other way than by poisoning with sewer gas. It could not have been "coincidence," as Dr. Herman says, for neither he nor anyone else, I believe, ever saw a case of septicæmia from conveyed infection which did not commence before the twelfth day; nor can he explain, I think, how, on such a hypothesis, immediate improvement followed the removal of the patient from the poisoned atmosphere in which she was lying. I ask your readers to reflect on what would have happened if this case had been treated on the assumption that defective sanitary conditions cannot produce puerperal disease. The illness was rapidly and daily ingravescing. On the fourth day the patient was removed with a temperature of

105° F.; on the next day it had fallen to 100°, and then she rapidly convalesced. If Drs. Herman and Cullingworth's views had been acted on this would certainly not have been done, and in my belief a valuable life would have been lost. I assume, of course, that neither Dr. Herman nor Dr. Cullingworth has chanced to meet with a case of puerperal disease which they have traced to defective sanitation; but no amount of negative evidence of that kind can outweigh a single case of positive evidence to the contrary, such as I have recorded in the paper referred to. This sort of argument reminds one strongly of the kind of reasoning one hears so often with regard to antiseptic midwifery. Dr. Brown, Dr. Jones or Dr. Robinson has attended a thousand or two thousand cases of midwifery without losing a patient, therefore all this modern talk about the value of antiseptics is mere twaddle and nonsense. It sounds strange, however, when coming from two such unquestionably high authorities on obstetric matters. It will be observed that I have been careful to talk of defective sanitation as a cause of puerperal "disease." I am quite prepared to see it proved that such disease is distinct from "septicæmia." There are more things in puerperal disease than are dreamt of in our philosophy, and the whole subject is too much in its infancy to justify very dogmatic assertion with regard to it. For aught I know to the contrary it may yet be shown that the two types of disease are as distinct as "typhus" and "typhoid" fevers; all I can say is that hitherto I have not been able to distinguish them, and, therefore, in my book on "Midwifery" I have described them both under the heading of "puerperal septicæmia," and I have never been able to see why infective germs suspended in the atmosphere should not be as dangerous as analogous germs on the hands. Unquestionably puerperal disease from poisoning with sewer gas is neither so common nor important as poisoning from infective germs on unclean hands or instruments. It seems, however, a curious argument of Dr. Cullingworth that it is dangerous to recognise and guard against a source of disease of comparatively rare occurrence because "to preach such a doctrine was to divert attention from the point of real importance—which was personal cleanliness on the part of all around the patient." Certainly I am open to no such imputation, for I have insisted on the paramount necessity of personal cleanliness and rigid antisepticism in obstetric practice as strongly as any recent writer on midwifery.

In conclusion, I am tempted to relate a very important and tragic case that occurred in my own practice thirteen years ago, which has not hitherto been published, because it illustrates a remark made in the discussion by Dr. Handfield-Jones that "he considered that a woman who for days or weeks before delivery had lived in a tainted atmosphere might be so impregnated with poisonous particles that after delivery her tissues would become a favourable breeding ground for septic germs"—a theory which I have myself always maintained to be possible. I was engaged to attend a lady in her first confinement. A fortnight before the expected date of delivery her labour commenced in her country home, some distance from London. She immediately placed herself in the train and went to her town house in South Kensington. The labour was over before either I or the nurse reached her. The nurse arrived first and found the child born and the placenta lying in the bed, attached to the child. She put on the bandage, and when I came I found the uterus firmly contracted and I had nothing to do. I particularly beg attention to the fact that neither I nor the nurse had occasion to make a vaginal examination; from first to last none was made, so that the patient could not have been poisoned by infective materials conveyed on the hands. Three days afterwards puerperal disease of the most intense type developed—to avoid argument I shall not call it septicæmia. Within a week the patient was dead. One of the nurses unfortunately pricked her hand, acute septic mischief resulted, and in a few days her arm was amputated at the shoulder-joint in University College Hospital. Naturally a tragedy of this kind was most impressive, and the origin of the disease was altogether a mystery to me. Two years afterwards the husband called on me and said that he felt it to be his duty to inform me that, having had several cases of obscure illness in his country house, he had had the sanitary arrangements investigated, with the result that a large cesspool had been found under the ground-floor rooms which his wife had occupied, the emanations from which she must have been constantly exposed to for many weeks before her confinement. Dr. Handfield-Jones' theory would explain this lamentable case. I am afraid it would be difficult to reconcile it with Dr. Herman's contention that the relation between the drainage and the illness was nothing more than coincidence.

I am, Sirs, yours truly,

W. S. PLAYFAIR.

George-street, Hanover-square, Nov. 18th, 1893.

To the Editors of THE LANCET.

SIRS,—The discussion on Dr. Braxton Hicks' paper at the Obstetrical Society on Nov. 1st turned upon the question of the influence of defective drainage upon the lying-in woman. The President, Dr. Herman, stated "that there is no evidence that the relation between defective drainage and puerperal fevers is anything more than one of coincidence," and Dr. Cullingworth, who supported him, added, and justifiably added from his point of view, that "it was a very dangerous doctrine to propagate that puerperal septicæmia could be caused by defective drains and sewer emanations, because it diverts attention from personal cleanliness." Believing, as I stated in the discussion, that the relation may be one of direct cause and effect, I have looked up several works on obstetrics, and find that some writers leave the question in doubt (Parvin, Kucher, and Leishman); Winckel is sceptical as to any such influence, but writers such as Playfair, Milne Murray, Galabin, Underhill, and Fehling believe that there may be a definite causal relation between defective drainage and puerperal septicæmia. The views of the various speakers at the discussion were equally divergent. Two things seem to me to be established: (1) that a lying-in woman may develop serious symptoms, with hyperpyrexia, if sewer emanations are present, though she may have previously lived under identical surroundings without apparently suffering; and (2) that these serious symptoms are often indistinguishable from certain forms of puerperal septicæmia, except from the fact that removal of the patient will—in early cases, at all events—prove that the cause was in the patient's atmospheric environment, the symptoms disappearing as rapidly as they do when the offending piece of decomposing placenta is removed in a case of puerperal sapræmia. That such cases, if not removed from this continuous atmospheric poison, do occasionally succumb seem almost inevitable. The fact that puerperal septicæmia is most frequent in winter, owing to deficient ventilation, is also a fair argument to show that defective drainage should not be disregarded by accoucheurs in their desire to be scientifically antiseptic and to remove other more obvious sources of danger.

I am, Sirs, yours faithfully,

Manchester-square, W., Nov. 20th, 1893. AMAND ROUTH.

STATE REMUNERATION.

To the Editors of THE LANCET.

SIRS,—I am obliged by your giving publicity to my proposed scheme for the better remuneration of medical men, although but an abstract of my suggestions and the omission of important safeguards that would prevent many of the objections to which you direct attention, such as in Clause 8, where it is proposed that any persons rated above forty guineas who availed themselves of the State medical men should at the expiration of their illness be liable for a levy of one guinea per week for such medical attendance, if rated at forty guineas, and even two guineas if rated at £60, and in rich districts this addition to the "health tax," as I suggest calling it, should be further increased *pro rata*, and the moneys so recovered would go towards the salaries of the State medical practitioners of poorer districts. In Clause 9 I mention: "It would be desirable that these district appointments should vary in remuneration, social position, and work, that by giving opportunities of promotion they should stimulate ability and encourage science and industry." It has been said that the popular medical man would have too much to do; then, I reply, he should be promoted to a district with less to do and increased stipend—i.e., if his popularity were due to his skill and attention. I allow with you, Sirs, that the scheme "bristles with difficulties," but they are not insurmountable. The need for some reform in our remuneration is urgent, and that there is something tangible and practical in my proposal I am led to hope by the unexpected attention the scheme has received from all quarters. It has been quite a task to reply to the many letters I have received on the subject, and from men of influence, for it concerns the public as well as the

profession, for they are not sufficiently protected from the numerous evils of the cheap doctors, and this you have admitted. I thank you for the generally courteous tone of your objections to my proposition, but I must take exception when you allude to the scheme as being "almost demoralising." It would prove no more demoralising than free education, for it is not suggested for a moment that anyone would be compelled to employ the "State doctor," for it is only a privilege offered to those who required or desired his aid; on the contrary, I expect the wealthy—and many, too, who are not wealthy—would still prefer their own private medical attendant, just as it is the great exception for a man of position and income to take advantage for his children of the Board school.[1] The passing of MR. FORSTER'S Act gave a great stimulus to the education of this country, especially to our private schools. 2. Free medicine would, I believe, prove in its result quite contrary to your fear of making all men much alike in professional work and remuneration. Why! I even suggest that the salary of the general practitioner should vary from £300 to £1500 or £2000, and the State physicians from £1000 to £10,000 a year. Allow me to add the following example of the working of my scheme for a district of 100,000 inhabitants, who are neither poor nor rich, such as is Hammersmith, which I propose should be divided into thirty districts, twenty medical men to receive a salary of £500 per annum, ten with £300. This would cost £13,000. A sixpenny rate produces £13,645. Each district should have a population of 2000; this would provide for 60,000: 26,000 go to hospital; 3000 are attended by the Poor-law; 1000 who would pay their own medical man, but most probably a greater proportion, leaving all that would be obtained from those who were rated above forty guineas for the poorer neighbourhoods. The accomplishment of the scheme would thus fall but lightly on any, and would prove to be to the injury of none. I would therefore again ask you kindly to reserve your judgment (for which I, with other general practitioners, have considerable respect) until you have received my address *in extenso* (which is now in the course of publication), for it is sad and lamentable to think that for success or even existence the majority of well-educated young practitioners must for the early years of medical life depend upon and look to, not his college and alma mater, but the Self Aid Association, London and Manchester, and other similar commercial institutions who live, and were called into existence by the necessities of an overcrowded and ill-rewarded profession. Apologising for the length of my letter,

I am, Sirs, your obedient servant,

FREDERICK H. ALDERSON, M.D.

Glenthorne-road, W., Nov. 20th, 1893.

THE PRESERVATION OF PATHOLOGICAL SPECIMENS.

To the Editors of THE LANCET.

SIRS,—So little has been written as to the best way of keeping morbid anatomy specimens with the view of their temporary or permanent preservation that the following remarks may not be out of place. On this point very few, if any, directions are given in the text-books, and in some half-dozen or so of the manuals of pathology which I have consulted the subject is ignored altogether. I do not, of course, refer to microscopical sections, on the preparation of which so many excellent works exist, but to the large naked-eye specimens, such as hearts, kidneys, malignant tumours, and the like. As curator of the museum of St. Bartholomew's Hospital many valuable specimens are in the course of the year sent to me from various parts of the country, and the value as well as the appearance of those which may be selected for placing in the collection would be very much enhanced if a few simple directions were carried out when the specimens are quite fresh. What usually occurs is that the specimens when just removed by operation or at a post-mortem examination are at once put into weak spirit and water, or what is worse, into a weak solution of carbolic acid. The result is that the various parts of the specimen, muscles, fibrous tissue and bones, all quickly assume a dirty brown colour due to the diluted colouring matter of the blood, which is only partially soluble in either of the above solutions. As it is almost impossible to get any of this colour out again the muscles lose the bright colour they had when fresh in exchange for this dirty brown, which they also impart to structures hitherto uncoloured. Unfortunately, no means are at present in use which will in any way—that is, at all satisfactorily—preserve the natural colour of the specimens. I am acquainted with Wickersheimer's solution, but specimens preserved by this means never look well. One is therefore obliged to fall back on spirit as the best preservative on the whole. Since it is impossible to retain the natural colour, the best thing to do is to get rid of it as soon as possible. The following will be found the best means of doing this. Thoroughly wash the specimens in cold water as soon as they are removed from the body and leave them to soak in water for twenty-four hours; in very hot weather twelve hours will be long enough. Livers and spleens, and organs which contain much blood will require to be left rather longer in the water, say for from thirty-six to forty-eight hours. In the case of the liver a stream of water sent through the portal vein by means of a syringe or tube attached to a tap will have the same effect as a prolonged soaking. The specimens should then be placed in a mixture of equal parts of ordinary methylated spirit (usually about 65 over proof) and water; the amount should be about equal to two volumes of the specimen or rather less; this is easily calculated approximately. If it is desired to preserve the specimen permanently it will be necessary to change the weak spirit at the end of a week, and again at the end of a month if it is much discoloured, and perhaps a third or fourth time; under any circumstances the spirit should be stirred every two or three days at first, in order to prevent the colouring matter of the blood from collecting at the bottom of the vessel and staining the lower part of the specimen. When it is ready for permanent mounting, as shown by the fact that the spirit no longer changes colour, it should be finally placed in spirit at proof as ascertained by the alcoholometer; for this purpose freshly distilled spirit diluted with distilled water should be used.

There are a few other points to be noted. Brains should be washed by running a little water over them and at once placed in strong spirit—i.e., ordinary methylated spirit without dilution. At the same time care must be taken, by means of cotton wool placed under and at the sides of the brain, to maintain its proper conformation, as otherwise it will become hardened in a distorted manner. Tumours which are soft when first removed, such as goitres, sarcomatous or tuberculous testes, &c., are much better preserved by being placed at once in strong spirit, after careful washing of the outside, before they are cut into; this will harden them sufficiently in a week or ten days to ensure that they retain their shape when cut and to allow a subsequent satisfactory microscopical examination of their structure to be made if this is needed. If this is required in the case of ordinary specimens treated by soaking and weak spirit a small piece should be cut off from the most typical part and placed in Müller's fluid or strong spirit when the specimen is quite fresh. If these simple directions are carried out many specimens which are, unfortunately, spoilt will be saved, and the appearance of all will be very much improved, and the ugly brown leathery lumps which are now handed round on plates at the Pathological and other Societies will be known no more. Specimens sent from the country should either be first washed and then wrapped in a cloth moistened with water, and covered with a piece of guttapercha tissue and plenty of paper, and despatched at once; or they should be well soaked and placed in a weak spirit solution for about a week before they are sent away—in this case the cloth should be wrung out in weak spirit instead of water. Hoping, in the interests of our pathological museums, that you will be able to insert this letter, I remain, Sirs, yours faithfully,

Welbeck-street, W., Nov. 20th, 1893. EDGAR WILLETT.

[1] I read lately that a medical man was compelled on account of poverty to send one son to the Board school and another to the factory.

"SEA VOYAGES FOR THE SURGICAL CONVALESCENT."

To the Editors of THE LANCET.

SIRS,—I should like to make a few comments on Dr. Thomas Dutton's criticism of my article on the above subject.

The impeachment of the accuracy of the figures given in the tables is, I submit, scarcely fair. The observations were furnished by six commanders of five different steamers, on voyages extending over a period of about four years, and

were recorded without any idea that they would be used for the purpose to which I have applied them. I have it vouched for on unimpeachable authority that the particulars were regularly entered in the logs, and, so far as refers to the Southern Hemisphere, they are supplied at the conclusion of each voyage to the Hydrographer to the Admiralty. My belief in their accuracy is as implicit as it is in Dr. Dutton's own figures.

Coming to the figures themselves, I notice that Dr. Dutton mentions neither the year of the voyage nor the line by which he travelled; I find, however, in the Medical Directory that he was surgeon to the R.M.S. *Tongariro*. The ships of the company to which this vessel belongs pass in the tropics through practically the same course as those of the company whose data I used, and therefore there is no reason why the tropical temperatures of the two lines should differ. As a matter of fact, the figures of the January sailings in my tables closely agree with those of Dr. Dutton in this particular; but with reference to the Southern Hemisphere the lower temperatures encountered by his vessel are explained by the fact that the ships of that line habitually go further south than do those of the line I referred to. The track chart of the latter line on the voyage from the Cape of Good Hope passes along the forty-fourth degree of south latitude towards New Zealand, and in the South Pacific it follows the forty-ninth degree nearly to Cape Horn.

Finally, in order to show how cautiously conclusions should be drawn from a single voyage, let reference be made to Mr. Dixey's article in THE LANCET of Aug. 11th, 1888, where will be found another series of temperatures of the Round-the-world trip, those to New Zealand being taken on the *Tongariro* and those home by another ship of the same line. It will be seen there that the lowest recorded temperature is seven degrees above Mr. Dutton's minimum.

I am, Sirs, yours truly,

Queen Anne-street, Nov. 15th, 1893. LEOPOLD HUDSON.

"TEACHING OF ANATOMY—ITS AIMS AND METHODS."

To the Editors of THE LANCET.

SIRS,—I am grateful for the support publicly given to me by Mr. Holmes and for that which I have received privately from many of almost equal professional rank. Among others a very prominent lecturer on anatomy at one of the largest London schools, who is an eminent surgeon and a leading scientist, favours me, on the subject of anatomical teaching, with a letter of sixteen pages containing several important queries. I should like to reply on one point both to Mr. Holmes and to the very eminent friend above referred to. Both these gentlemen stand up somewhat for embryology and morphology. "These sciences," says Mr. Holmes, "throw light on the facts of anatomy, and, if properly used, may make these facts more interesting and more attractive to the learner." Let us see how the thing works in the teaching, as illustrated by his own contentions, of the eminent anatomical lecturer I have ventured to introduce. Mr. A. B—— (as I will take the liberty of calling this gentleman) has his class before him; he is going over, we will say, the axilla, and has come to the subclavius muscle. "Is there any inconvenience," this gentleman asks, "in my telling my class about the subclavius muscle in Menobranchus—how it arises from the precoracoid, envelops the head of the humerus, and is muscular from origin to insertion; or in my dilating upon its poor little human representative, the 'degenerated remains of an old and powerful family'?" "I can conceive of no more harm in this than could result, in a somewhat kindred line of thought, from a historical study of the curious windings of certain London streets. Have we not, many of us, wondered, for example, at the tortuous course of Marylebone-lane? Is there any danger in submitting, as is known to be the fact, that Marylebone-lane simply follows the course of an old departed London stream? Generalising, may I not explain the why and wherefore of the different courses of the right and left recurrent laryngeal nerves, or even refer to Flood's ligament?" "Do so by all means," I reply. "Let the whole mind, heart, and soul of the lecturer always flow forth freely and sympathetically to his class. Every thoughtful man would deem it a privilege to listen to you on such topics." But you are specially qualified to speak about the subclavius muscle of comparative anatomy, about Flood's ligament, about the right and left recurrent laryngeal nerves, and so forth. You speak on these points of what you know in the ordinary sense of the term, of what you have dissected in the lower animals, of what you have "seen and handled," and can show. For myself, I humbly confess that if I were to discourse on the subclavius of Menobranchus I should simply be repeating what I might have learnt from you or read in some book or other. I confidently aver that if teachers continued to study and discuss Menobranchus and serial homology and such like topics, most of them would have but a feeble grasp of ordinary human anatomy.

But if to the lecturer pertains the high privilege of free, and, I would say, loving, intercourse with his class, it is otherwise, I would submit, with the writer. In a text-book the corollary cannot by the absentee—the reader—be distinguished from the thought it aimed at introducing, as it can in the case of the oration, where the living voice is heard. Text-books are but as finger-posts, whose brief indications must be taken in *verbatim et literatim*, or not at all. If the text-book should explain why the recurrent laryngeal nerve loops round the arch of the aorta on the left side and the subclavian artery on the right, must it not also dilate upon the course of the chorda tympani, upon that of the facial nerve, upon that of the nasal nerve? If it is to rest certain statements on a consideration of the aortic arches, must it not bring in the "sacral"—nay, the "coccygeal" aorta? Must it not submit that the internal iliac is but the first part of the original umbilical artery, that the external iliac is but an enlarged intercostal, and so forth? Must it not give the reason why we have usually a right, but sometimes a left, superior vena cava? Can it leave out the vestigial fold, the venæ azygos? Is not the anatomist landed, in fact, in the vexed question of the origin of the venous system? Where can you draw the line? where can you say, This is enough? Give at least credit to the leaders of the new school of being intelligent and wise in their generation. If they could have brought in this new matter without revolutionising anatomy as taught before their time—that is, as taught in the dissecting-room—they would have done so. But the thing is impossible. You must found your anatomy either on the facts of the dissecting-room or on embryology and morphology—on what is visible and tangible, or on what is not so. In the former case you get a practical knowledge of anatomy—in the latter case you get an abstract and theoretical knowledge; in the former case you get anatomy familiar to the eye and finger—in the latter case you get anatomy as a mental conception; in the former case you get the anatomy of the surgeon—in the latter case you get the anatomy of the scientist. The two things are absolutely distinct. One mode of study—the right mode, to my mind—cannot better be compared than to learning a bone with bone in hand. The other mode is like learning about a bone without ever seeing it. All pleadings in favour of embryology and morphology have reference, I submit, not to the practical learning contemplated in the study of anatomy for medical men, but to a kind of learning which savours of merely remembering, as one remembers a statement that has been heard, and not as one remembers something that has been seen or done.

In text-books for students of human anatomy all such digressions are foreign matter, and, to my mind, simply deplorable. They mislead the student. They mislead the teacher. They mislead the examiner himself. The examiner must read the text-books, and to some extent he necessarily examines from them. Then what happens? He asks a question quite incidentally about, say, the "fourth meatus," or the "fossa duodeno-jejunalis." The candidate is rejected, we will say. He immediately, student-like, attributes his failure not to his not having known about some big thing like the arch of the aorta—which, by the bye, is now redescribed *embryologicè*—but to his not having known about the "fourth meatus," or the "fossa duodeno-jejunalis," or whatever new-fangled thing or name he may have been asked about. The "news from the front" is soon sounded forth in trumpet tones by some score of comrade voices, and the whole school sets to "Macalisterise" for the next three or six months.

Our great leader will pardon me. A short expression is badly wanted to designate such anatomy as is not dissecting-room anatomy, whether it be based on embryology or on morphology, or simply be such as goes beyond what the ordinary dissector can see in the dissecting-room. It can be but a just tribute of respect to Professor Macalister, the founder and apostle of such anatomy, to use his name in designation of the same. The terms "advanced" anatomy,

"scientific" anatomy, are but question-begging appellations, which cannot meet the need for a short but correct term.

There is, however, one leading feature in which the new school would at first seem to be right, and through which it enlists much public sympathy. It asserts that it facilitates study. Professor Macalister, after drawing an admirable, indeed, an unusually vivid, picture of the crushing weight of present requirements as they lie on the poor students' shoulders, comes to his solution of the difficulty, "Anatomy is simplified by being viewed from a morphological standpoint." I will endeavour once more to focus Professor Macalister's argument: 1. "Morphology brings into line"—these words are borrowed from another eminent writer of the same school, but convey tersely and pointedly what is substantially Professor Macalister's meaning—Morphology brings into line "what would otherwise be a number of facts without a nexus." 2. "Morphology supplies a valuable form of memoria technica." 3. "Morphology obviates the 'necessity of committing to memory.'" I will grant that this is so: morphology may make it easier to learn anatomy, *as a number of facts arranged in a line*, like a set of nine-pins to be knocked down with one cast of the wooden ball—e.g., to be spouted out with volubility at the examination table, or grandly talked about at society meetings. "This is infinitely better," says Professor Macalister, "than any system of mnemonics." But it *is* a system of mnemonics. Worse still—I quote Professor Macalister's own admission—"It invests things of *little practical importance* with the *deepest interest*," with the same interest, that is, as more important things; "it places the vestigial fold of the pericardium on the same platform as the superior vena cava, the ductus arteriosus as the aorta, the vena azygos as the superior vena cava." I would submit that, even on the score of mnemonics, morphology is not even an unworthy solution of our difficulties, and that it but adds to our embarrassments.

I come very briefly to the practical aspect of the subject. What can the surgeon know of a simple rupture if he has not carefully dissected the parts concerned in inguinal and femoral herniæ? How many students are there now in our schools who have? Here is a case, urgent if any case can be, a case of strangulation: "Up, Sir, in the dead of the night, to yon lonely cottage; without assistance, lighted by a half-crazed old woman holding a halfpenny dip, and do your best with your hernia knife ..... or ..... "Well, it's only just one other case of malpractice." "*Few medical students*," you know, "*expect to become competent surgeons in after life.*" The above italicised sentence—will the reader believe me?—is quoted verbatim from a "leading article" published only last week in one of the London medical journals. Let this go forth to the people of England. Let the bone setters hear it. Let the "quacks," let the "sham oculists" understand it, and ..... wait till some big plaintiff or other tries to make out—and what if he should prove his case?—that some surgeon in one of these gunshot or other wounds so frequent nowadays has tugged at the transverse process of the atlas, mistaking it for a bullet. This is no imaginary case, it is one that has been before our law courts. Am I wrong in my estimate of what the general practitioner—the backbone, be it remembered, of our profession—should be able to undertake? I quote from a letter in the *British Medical Journal* of a fortnight ago: "The reason why so many of our general practitioners are afraid to undertake the simplest operation, or to reduce a compound fracture, is that they have forgotten their anatomy. Consequently patients crowd the out-patients' rooms of an infirmary, or place themselves under quack bone-setters or sham oculists, for operations that should be done by the general practitioner in his own surgery." General practitioners are complaining, and rightly so, I believe, of the competition of the hospitals. Why is this? To a great extent because they "have forgotten," or, rather, were never taught, "their anatomy," except in an inefficient and unpractical manner. I verily believe that if I were suffering from strangulated hernia in a lonely, out-of-the-way place, I would rather attempt to operate on myself—(cocaine being injected this should not be *impossible:* it is the *finger* that finds the stricture, not the eye)—than place myself in the hands of a learned surgeon taught by the new school.

If "scientific anatomy" ever comes to be regarded, as I hope it may, as something to come after, and to be superadded to practical dissecting, then I for one would no only drop all opposition to the same, but would watch the experiment with the most hearty sympathy. I would urge, however, that this "higher order of teaching" be handed over to special teachers. The new and abstract line of thought is so different from, indeed so antagonistic to, the old and practical, that no teacher, to my mind, can well excel in teaching both. I am, Sirs, yours faithfully,

T. COOKE, F.R.C.S.

To the Editors of THE LANCET.

SIRS,—Mr. Cooke has unquestionably done good service in drawing pointed attention to the change that is threatening to come over the teaching of anatomy to medical students. No one can doubt the great charm and interest that are to be found in embryology and morphology, and the high scientific value of these departments of biology. However, that is not the question at issue, but, rather, what form of anatomical knowledge best fits a man for the practice of medicine and surgery. My verdict must be given most unhesitatingly for the old-fashioned dissecting-room human anatomy. I would submit that a thorough knowledge of the structure, relations, and naked-eye physical characters of the different parts of the human frame is an essential preliminary to sound diagnosis and skilful surgical treatment. This knowledge can only be gained by each student carefully dissecting for himself, and such work is an excellent training for both the hand and the eye; but of equal significance is it that dissection is the best available means of making a student observe for himself and observe accurately. When we remember that in medical practice more mistakes are made by want of looking than by want of knowing, it is impossible to overrate the importance of training our students in the art of observing for themselves. Embryology and morphology fail in all these particulars. They are most interesting, but they do not fit a man for the practice of his profession. By the ordinary medical student they can be learnt only from books and not from personal observation; they may train the memory and the imagination, but not the eye or the hand. It is said, however, that it adds great interest to the study of anatomy to combine with it a study of embryology and morphology. True, it does. But let us not shut our eyes to the danger this "interest" brings with it. It may so easily excite and please the imagination at the expense of the faculties of observation. It makes man's relations in the scale of nature of more pressing importance than the relations of man's viscera or arteries. It substitutes speculation for exact knowledge. By all means let us have scientific anatomists, let us unravel the secrets of embryology and unfold the wonders of morphology; but do not let us confuse these "accomplishments" of the few with the "necessities" of the many. The medical practitioner wants a practical knowledge of human anatomy; this must be gained—can only be gained—by diligent work in the dissecting-room. After he has acquired this, by all means let him add to it all that embryology and morphology can tell him.—I am, Sirs, yours faithfully,

A FORMER TEACHER OF ANATOMY.

"SOME POINTS WITH REFERENCE TO THE DIAGNOSIS AND TREATMENT OF TYPHOID FEVER."

To the Editors of THE LANCET.

SIRS,—In an address by Dr. Hood upon the above subject in THE LANCET of Nov. 11th, some far-reaching propositions are brought forward as to the use or disuse of alcohol in the treatment of enteric fever; and the statistics of the cases at the London Temperance Hospital are cited to prove Dr. Hood's views in favour of the use of alcohol, the said statistics being cited as offering "a comparison of the two death-rates as fair and reasonable as any such comparison is possible to be." The responsibility of having to prescribe or withhold alcohol from patients suffering from enteric fever is one which weighs heavily on many practitioners who read THE LANCET. It would be interesting and helpful if Dr. Hood would give us a proper table of his cases, a table such as would be expected by men who are accustomed to be responsible for the lives of patients affected with typhoid fever. I will prepare a similar table of the cases to which he has referred at the Temperance Hospital, and hope that we may obtain some additional light upon the important question to which Dr. Hood has referred.

My present impression is that Dr. Hood has fallen into the error of citing the cases of young children as if they were comparable with a set of cases having an essentially different rate of mortality. Dr. Bristowe says, "Young children seldom die of this disease." Dr. Hood will, of course, show the ages and all other material particulars of his cases in the table which I ask him to favour us with. At this moment, I cannot find time to prepare such a table, but I will endeavour to do so for the next issue of THE LANCET. My own conviction is that in enteric fever the use of alcohol rarely does anything but provoke premature exhaustion of the heart muscle, and spoil the digestive powers of the stomach.

I am, Sirs, your obedient servant,

Dover-street, Piccadilly, Nov. 14th, 1893. JAMES EDMUNDS.

To the Editors of THE LANCET.

SIRS,—Dr. Hood's criticism, in THE LANCET of Nov. 11th, of the practice of the medical staff of the Temperance Hospital and the non-alcoholic treatment of typhoid fever will, I trust, have the good effect of showing that there is much to be said on that side of the question to which he so forcibly expresses himself as opposed. As resident for some years in the fever hospitals my views of the value of alcohol in fever underwent, solely as a result of the experience there gained, entire modification. The conviction became forced upon my mind that, in no case in which it was used did benefit to the patient ensue; that in a proportion of cases its use was distinctly hurtful; and that in a small, but appreciable, number of cases the resultant harm was sufficient to tilt the balance as against the recovery of the patient. During a residence of three years in the City Fever Hospital, South Liverpool, I was enabled to reduce the yearly consumption of alcohol to an amount so small that, taken together with the clinical records of the hospital during that period, it fairly entitles me to claim the feasibility of managing a fever hospital without the use of alcohol in any shape or form, either for the staff or for the patients. The diseases dealt with comprised scarlet fever, typhus fever, typhoid fever, and diphtheria. A somewhat precise standard for comparison of results was at hand in the records for the same period of the City Hospital, N., the two institutions being in point of fact identical in all details of management and discipline, with the exception that at the latter alcohol continued to be freely given. This test was excellently well borne by the non-alcoholic method of treatment. The facts and figures upon which this conclusion is based I have at hand and regret that I cannot allude more fully to them here. I may add that I approach the subject free from teetotal or other bias. The rejoinder of the staff of the Temperance Hospital will be awaited with interest.

I am, Sirs, yours faithfully,

Robert-street, N.W., Nov. 22nd, 1893. C. KNOX BOND.

"SIR ANDREW CLARK."

To the Editors of THE LANCET.

SIRS,—In the interesting obituary notice of the late Sir Andrew Clark which was published in THE LANCET of the 11th inst. you quote from an address of his the following words: "I went out to Madeira to die, but I did not die, and on my return I got the appointment and now I am the only one living who was then on the staff of the hospital." If Sir Andrew Clark was correctly reported he made a curious mistake, for I believe that more than one of the London Hospital staff of 1854 outlive him. I can answer for one—my father, Dr. W. J. Little, who was then physician and who is now, I am happy to say, enjoying a green old age in his eighty-fourth year, although he has for some years given up practice.

I am, Sirs, yours faithfully,

Seymour-street, W., Nov. 20th, 1893. E. MUIRHEAD LITTLE.

"THE HYGIENIC AND THERAPEUTIC ASPECTS OF CLIMBING."

To the Editors of THE LANCET.

SIRS,—Under the above title Dr. Hermann Weber contributes an interesting paper to THE LANCET of Oct. 28th last. My name is mentioned in that communication with reference to the influence of climbing on the temperature of the body, and the following remark occurs in Dr. Weber's paper: "He (Dr. Marcet) came to rather different conclusions—namely, that the bodily temperature becomes invariably diminished by the act of climbing, and more so if this be done upon an empty stomach, or if the climbing is associated with mountain sickness." Dr. Weber's quotation is from a paper I communicated to the *Archives des Sciences Physiques et Naturelles*, Geneva, 1869, in reply to remarks made by a Swiss gentleman, Dr. H. Virnet, and it is quite true that the observations on myself led to that conclusion as far as I was concerned. At the same time I was careful not to generalise on those personal data, and I certainly did not conclude that the bodily temperature becomes invariably diminished in the act of climbing. The last paragraph of my paper runs as follows: "The matter discussed in the present paper will, I hope, assist towards reconciling the two opinions emitted with respect to the influence of muscular exercise in the act of climbing on the temperature of the human body. Some people become warmer and others colder, and, moreover, in the same person the temperature appears liable to rise or fall according to circumstances."

I am, Sirs, yours faithfully,

Nov. 18th, 1893. W. MARCET.

"THE SO-CALLED 'PARASITIC PROTOZOA OF MAMMARY CARCINOMA."

To the Editors of THE LANCET.

SIRS,—I will ask the favour of a brief reply to Dr. Cattle's criticisms. 1. I fear that his doubts upon the genuine character of the parasites depicted must be due to my own defective draughtsmanship, for the slide in question was some time since submitted to Dr. Armand Ruffer, who pronounced the most characteristic cell-forms therein to be particularly well-marked examples of the "protozoa." 2. I am pleased to find that Dr. Cattle admits that the "parasites" can be seen in unstained preparations, a statement with which I entirely agree. My argument on this point was directed against the view with which their "discovery" was first enunciated—that special staining methods were requisite to render them visible, or, later in the controversy, to differentiate them. 3. I think that no up-to-date pathologist will recognise the existence of any "fibrous cancer" in which characteristic cells, with their usual mode of arrangement, cannot be readily detected by the microscope; though, as in the historical example of the late German Emperor, a piece of non-cancerous tissue may be erroneously examined. I readily admit that cases of atrophic scirrhus, permitting life for twenty or more years, furnish an approximation to the spontaneous cicatrisation of tubercle; but even here death eventually results from visceral metastases, and no complete obliteration of the carcinoma cells ever takes place. The onward course of the malady is sure, if slow. 3. Dr. Cattle's rather exceptional instance of breast carcinoma in a woman aged thirty-three in no way impairs my generalisation that cancer, with the reservation I have previously made, is emphatically a disease of advancing age, practically restricted to degenerating organs and to decaying people. The devolution of the mamma ordinarily begins about thirty-seven years of age; but cases of its premature supervention must needs sometimes occur. 4. In view of Dr. Cattle's former utterances on this parasite question, I can hardly be surprised that he finds my explanation of the *rationale* of cancer proliferation and diffusion "unsatisfactory"; but the theory of autositic cell reversion, upon which the work he does me the honour to mention is based, applies to all kinds of cells liable to malignancy, and I should much like to know why his difficulties seemingly are greater in the case of epithelial than of the various remaining cell species. Finally I would very respectfully ask our learned societies in general, and the Pathological Society in particular, why a sufficiently large and representative committee is not appointed to authoritatively thresh out a question so generally exercising professional attention.

I am, Sirs, yours faithfully,

HERBERT SNOW.

Gloucester-square, Portman-place, W., Nov. 20th, 1893.

"LOCOMOTOR ATAXY TREATED BY PHOSPHATIC INJECTIONS."

To the Editors of THE LANCET.

SIRS,—Having read the interesting case related by Dr. Forbes Winslow,[1] I wish to quote very briefly the following

[1] THE LANCET, Nov. 18th, 1893.

case. A poor married woman called for me on account of several symptoms, including locomotor ataxy. After a trial of the usual remedies by the mouth I began injections of phosphate of soda (ten centigrammes in one gramme of the vehicle), prepared according to Dr. J. Roussel's formula, on Dec. 31st, 1892. I made one injection every alternate day for a month, then stopped for a week, began again on Feb. 6th, 1893, and stopped on the 20th. The patient having relapsed, and presenting anew the symptom of throwing her legs sideways when walking, I gave her the injections again from March 8th till the 22nd. On April 10th she left Geneva for the country considering herself as cured. Since then I have lost sight of her. I must add that five or six times I injected arseniate of strychnine or phosphorus; but the phosphate seems to have been the active remedy. She had altogether thirty-two injections. When I have a sufficient number of cases I will publish them. This is only a short note written in a hurry.

I am, Sirs, yours truly,

Geneva, Nov. 20th, 1893. A. CORDES, M.R.C.P.Lond.

"STRICTURE OF THE ŒSOPHAGUS AND CANCER OF THE LIVER."

To the Editors of THE LANCET.

SIRS, — Having just read in THE LANCET of Nov. 4th Mr. Mayo Collier's letter on the above subject, in the concluding remarks of which he invites other members of the profession who have met with similar cases to record them, I beg to relate a few particulars of one which came under my care a few weeks ago. A delicate youth about fifteen years of age, a clerk in an office, consulted me for failing health and complained that when he took his meals the first portions were always vomited, but when he returned to the table he could swallow the remainder. This led at once to an examination of the abdomen, and I found a large hard tumour occupying the upper part of that region, a large, prominent mass bulging in the left of the epigastrium, a smaller one down in the left hypochondrium, and another less prominent one in the right hypochondrium. In a few days ascites supervened, which was relieved by paracentesis, and on the last day of his life he was jaundiced. I regret to say that in consequence of the rapid decomposition which followed after death I refrained from making a post-mortem examination; but I think that the position and character of the tumour, together with the symptoms and the association of ascites with jaundice, justify the opinion that it was in all probability a case of the description recorded by Mr. Collier. To the best of my recollection, the power of swallowing was completely lost as the disease progressed.

I am, Sirs, yours truly,

Rotherham, Nov. 21st, 1893. WM. OXLEY.

CONSULTATION WITH HOMŒOPATHS.

To the Editors of THE LANCET.

SIRS,—In a certain town a homœopath practises. A well-known London surgeon sees no harm in accepting operation cases from him. An equally well-known provincial physician, who well knows the nature of this man's practice, meets him in consultation. A medical man practising in the same town, and physician to the local hospital, for many years has taken his minor surgery and met him in consultation. Will you kindly express your opinion as to the etiquette of this procedure? I am, Sirs, yours faithfully,

Nov. 18th, 1893. MEDICUS.

*** The etiquette is quite established in regard to such a question in medical cases. There can be no agreement between a homœopath and an ordinary practitioner. We are not prepared to say that in surgical cases of emergency this rule should be pushed to an extremity, but even here it is obvious that two cannot walk together unless they agree. Both the patient and the surgeon might suffer for want of proper medicine, as every good surgeon would admit.—ED. L.

MR. T. D. HARRIES, F.R.C.S.Eng., M.R.C.P.Lond., J.P., has been elected Mayor of Aberystwyth for the ensuing year.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

End of the Coal Strike.

THERE are perhaps few great industrial centres in England in which rejoicing at the termination of the coal strike has been more hearty and widespread than in Manchester. For many weeks past men, women, and children, evidently unused to begging, have frequented the leading thoroughfares and the tram termini of the city asking for subscriptions on behalf of the starving families of the colliers on strike. There is little doubt that considerable sums of money have been collected by this means, but nevertheless the sufferings of the poor women and children have undoubtedly been severe, and the rejoicings now taking place among the colliery districts in Manchester and its neighbourhood at what is locally called the "end of the coal war" are very real and absolutely universal. In this connexion it may be mentioned that the corporation, as proprietors of all the gasworks in Manchester, have incurred considerable odium because of their recent determination to increase the charge for coke at the several stations; the newspapers have contained strong protests against this decision, but hitherto without avail; and the price of coke is still so high as to afford little relief to the poor, who cannot raise the money necessary to provide sufficient fuel of any kind to protect themselves from the severe weather of the last few days. Hitherto, fortunately, the death-rate in Manchester from diseases produced by cold and privation has not been excessive, and there is now every hope that, the colliers having returned to work, the Christmas season will prove a brighter one for the poor of Manchester than seemed likely even so recently as last week.

The Return of Influenza.

It is disappointing to find from the official returns that influenza is again beginning to figure in the Manchester death-roll, four deaths having been attributed to that disease during the week ended Saturday last, and one death in each of the two preceding weeks. These numbers in themselves are of course not excessive, considering the size of Manchester; but unfortunately there are indications that this unwelcome disease has already made considerable headway in the city and its neighbourhood. In Salford especially there appears to have been a large number of attacks, and I hear of not a few persons in good social position both there and in the city who have been temporarily laid aside by "la grippe." According to general report the disease does not appear to have been present this year in by any means so severe or so fatal a form as in either of the last two years, but if the deaths have been less numerous the disease seems to have been as infectious of late as ever it was, and to have spread as rapidly as in former years from one end of the city to the other. It is said that a considerable number of persons who suffered from influenza either in 1890–91 or in 1891–92 have been among the first to take infection again this year; if this turns out hereafter to be the general experience there will be little future solace in the belief, which is common in certain quarters, that one attack of influenza confers a certain amount of immunity from subsequent attacks of the same complaint. According to the reports from the Swinton schools and other infected places the cases are doing well, and it is hoped that the schools, at any rate, will shortly be freed from the disease.

Our Healthy Homes Societies.

With the approach of winter one is glad to note that our healthy homes organisations are beginning to bestir themselves for another good season's work. This year, too, in place of a single society—that of Ancoats—we have in Manchester as many as three separate associations working on the lines of the parent society, but in other and not less suitable parts of the city. For some unexplained reason, last Thursday night was the opening night for all three of our societies, the consequence being that, as the available voluntary musical and other "talent" had to be distributed at three separate points, the entertainments at each of them were perhaps less effective than they would have been under other circumstances. It is to be hoped that when the period approaches for fixing the date of the next monthly meeting the blunder of holding all three meetings

simultaneously will be avoided.—The Hulme Healthy Homes Society held their inaugural meeting last week. Dr. Collins, the indefatigable honorary secretary, had evidently taken considerable trouble to secure both a large audience and a well-arranged programme for their amusement. Professor Leech, M.D., of the Owens College, presided, and indicated the lines on which the operations of the society should be carried on. He pointed to the great success achieved by the older sister society in Ancoats and recommended that a working committee should be formed who should divide themselves into small subcommittees and apportion the whole district of Hulme among them.—The Angel Meadow Healthy Homes Society likewise held their opening meeting on Thursday night. Several members of the city council were present at the meeting, and one of them took the chair. A pleasant lecture was delivered to the poor people of the district, who were evidently greatly interested in this new project for their benefit. It is much to be desired that similar societies should be organised in others parts of our rapidly growing city.

Nov. 21st.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Newcastle and Gateshead.

THROUGH the munificence of Lord Armstrong and of the late Mr. William Dinning, engineer and naturalist of Newcastle, the Hancock Museum of the Natural History Society of Newcastle is shortly to receive a very handsome addition. Mr. Dinning left some time ago some rare fossils to the museum on the condition that the Society provided cases for them, but as the Society was without means for this purpose it was unable to avail itself of the legacy. Now Lord Armstrong has stepped in and generously given the money—£1500—required for the purpose.

Infectious Disease.

The medical officer of health has reported a somewhat serious outbreak of scarlet fever in Newcastle. This so far is fairly well confined to the west end of the city, where influenza also is now very prevalent. Gateshead, too, is suffering from influenza and is not free from diphtheria.

The Tees Valley.

Mr. Barry's report on the late outbreak of enteric fever in the Tees Valley (whereby such towns as Darlington, Stockton and Middlesbrough were shown to have been infected by the pollution of the Tees water and notably by pollutions from Barnard Castle), has produced a good effect, as the Barnard Castle sanitary authority has given the necessary notice to have the sewage of the district diverted from the Tees.—With regard to the water-supply of Morpeth, the Local Government inspector has made a favourable report based on the analysis of Professor Frankland. He agrees with the medical officer of health for Morpeth that the source—namely, the bore-hole in the market-place—must always be looked upon with suspicion owing to the possibilities of contamination.—The ex-mayor of Stockton (Major Ropner) has generously apportioned his salary among the medical charities of the town.

Sunderland.

The Sunderland Sanitary Reform Association held its first meeting last week. There was a good attendance, and it was stated that Sunderland should be one of the healthiest towns in the kingdom. To this the town clerk demurred, saying that the geographical position of Sunderland, exposed as it was on the north-east coast, with a clay subsoil and all the liability attaching to it as a seaport, to the importations of disease, precluded that happy condition; but it is the strong opinion of many inhabitants that the sanitary condition of their town can be improved, and with this object they have established the Association.

Effects of the late Gale.

The late gale has crowded our hospitals with accidents. From the Solway to the Tyne and from the Tweed to the Humber severe surgical cases have been brought in daily, and the resources of our institutions have been well tried.

Newcastle-on-Tyne, Nov. 22nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Health Lectures in Edinburgh.

ON Saturday last Professor McFadyean delivered the last of his three lectures on "Diseases of Animals Transmissible to Man" Principal Whalley of the Royal Veterinary College of Edinburgh occupied the chair. The subject the lecturer specially dealt with in this lecture was the diseases caused by vegetable parasites or germs which man may acquire by means of meat or milk. The first of these taken up was anthrax. He pointed out the character of the organism and its spores, and how animals became infected. The flesh of animals dead from anthrax was dangerous if taken as food, but the danger in this country was less than it appeared to be because, as a rule, the temperature was lower than was required for the formation of spores, and it was the spores which were most dangerous, as they were not destroyed in the stomach. A considerable number of anthrax carcases reached the market, but the sending such flesh for sale was a crime for which a fine was no adequate punishment. The more common mode of infection to man was through skinning and dressing animals dead from the disease, malignant pustules resulting from inoculation through a scratch or abrasion. Occasionally infection was through the lungs, the spores being inhaled, as in wool-sorter's disease. For the prevention of human anthrax the public health authorities were to be looked to to keep all infected flesh out of the market by a thorough system of meat inspection. There were many places where the system of inspection in force gave no guarantee that the flesh of anthrax animals would not find its way into the market. He referred to the prevention of infection by inoculation. The lecturer then referred to actinomycosis. This disease occurred most frequently in cattle, but man was liable to it. It was improbable that the disease was communicated to man from cattle. Cattle contracted it probably from straw on which the germ was growing, and this was most likely to be the source of infection in man, so that chewing a straw might not be as harmless as farm labourers regarded it. He next dealt with tuberculosis, and referred to its prevalence in cattle and in man; to the experiments made in France in 1865 and 1868, which proved that it could be experimentally transmitted from one to another, and from man to animals; and to the discovery by Koch in 1882 of the bacillus of tubercle. These discoveries gave rise to much discussion amongst sanitarians as to the danger of tuberculous meat, one section maintaining that no measure short of seizure and total destruction of every carcase affected in any degree with tuberculosis would sufficiently safeguard the public health, and the other section protesting that no such wholesale destruction was required, since only the actually diseased parts in a tuberculous animal contained the germs. At the International Congress for the study of tuberculosis, which met in Paris in 1888, the advocates of total seizure had it nearly all their own way. This decision awakened public interest, and the Government appointed a Royal Commission to report on the subject. Their report had not yet been received. Meanwhile we should consider the danger and decide upon what measures ought to be taken to protect ourselves. Between 10 and 15 per cent. of all cattle slaughtered for human food in this country were affected. Of the cows in Edinburgh giving milk probably over 20 per cent. were tuberculous; of these only a small proportion of cases had their udders affected. He pointed out the danger of eating raw tuberculous meat, which was not as a rule done by people in this country. With reference to milk he pointed out its dangers when the udder was tuberculous. Unless the udder was tuberculous he had found by experiment that the milk was not dangerous. The most complete security against infection from milk was obtained by steaming it before use. The custom of steaming or boiling milk had not come into general use because the flavour of the milk was distasteful to many people. It might be said that since, by merely abstaining from the use of under-done meat and raw milk, everyone can absolutely protect himself against the danger to which he is exposed, the public health authorities had no duty in the matter beyond disseminating knowledge. This, however, he did not think the public would agree to, and it would be reasonably expected that if there were any simple and not too expensive means of

keeping tubercle bacilli out of the market those who were trusted to look after the public health would see that these means were put inforce. He then referred to the means that might be taken to keep tuberculous meat out of the market by inspection and the abolition of private slaughter-houses With regard to unwholesome milk, compulsory inspection of dairy cows at short intervals by trained inspectors was necessary. He further pointed out how the prevalence of tubercle amongst cattle might be reduced. He then briefly referred to foot and mouth disease, which occurred from time to time as an epidemic among human beings by means of milk from affected cows. Boiling or steaming made the milk safe. Meat-poisoning, as distinguished from meat-infection, was the last point dwelt upon, and he pointed out its nature, and how the former differed from the latter.

Lord Roberts in Edinburgh.

During Lord Roberts' visit to Edinburgh last week the University conferred upon him the honorary degree of LL D After the ceremony the students took him through part of the town in an open carriage from which the horses had been removed.

Post of Librarian to the Aberdeen University.

The candidates for this post have now been reduced to a short list of two gentlemen—viz., Mr. P. J. Anderson, M.A., LL.B, and Mr. A. W. Robertson, M.A. Mr. Anderson was till recently Lord Rector's Assessor in the University Court, and has for a number of years shown an active interest in the welfare of the University. Mr. Robertson has done good work as the Curator of the Aberdeen Public Library.

The Election of Lord Rector to the Aberdeen University.

The election of the Lord Rector of the University took place on Saturday, the 18th inst., when the Marquis of Huntly was re-elected. The voting was conducted in the usual time-honoured manner, the students being divided into four nations, according to their respective birthplaces, and in three of these Lord Huntly had a majority. The fourth, at the same time the smallest in number of voters, showed itself to be in favour of the other candidate, Dr. Wm. Hunter, M P., by a majority of 15 votes. In the evening the students, to the number of about 500, held the customary torchlight procession, which was an unqualified success. Many wore fancy dress, and the effect under the light of the flambeaux was grotesque and at the same time most picturesque as they marched through the chief streets of the city.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Ulster Medical Society.

ON Wednesday, Nov. 15th, the first meeting of the present session of the Ulster Medical Society was held, when Dr. Whitaker vacated the chair, which was taken by the new President, Professor Byers, M.D. The latter delivered his introductory address, which dealt principally with obstetrical and gynæcological questions. At its conclusion he was accorded a hearty vote of thanks on the motion of Dr. Redfern, seconded by Dr. O'Neill. The annual dinner is to be held on Nov. 30th.

Portadown Water-supply.

The engineers appointed by the Town Commissioners of Portadown to report on the relative merits of the various schemes for supplying the town with water recommend that the supply be taken from the river Bann, immediately above Whitecoat Point, as the water is, on analysis, found to be good and is unlimited, and as this is the cheapest possible.

Children's Hospital, Belfast.

The following changes have taken place in consequence of the resignation of the senior physician, who has been placed on the consulting staff. Dr. Howard Sinclair becomes physician, and Dr. S. B. Smyth has been transferred from the assistant surgeoncy to the assistant physicianship. After a very keen contest Dr. J. S Morrow was on Friday, Nov. 17th, elected assistant surgeon.

Belfast Royal Hospital.

The annual meeting of the friends of this charity was held on Monday, and from the report I learn that during the year there were 2992 intern patients in the Royal, Convalescent, Consumptive, and Children's Hospitals, while during the same period 21,749 extern cases were treated. The death-rate after surgical operations was 4 7 per cent. Chloroform was administered 171 times, ether 20 times, the A.C.E. mixture 12 times, and methylene 33 times; 170 students were in attendance during the winter and 97 during the summer session. With a view to improving the clinical teaching and to keeping a record of the history of all the cases admitted to the hospital, Dr. Calwell has been appointed registrar. The financial year commenced with a balance in favour of the hospital of £414 13*s.* 4*d.* and ends with a deficiency of £145 13*s.* 1*d.* The expenditure for the year has been £8815 6*s.* 6*d.*, and the receipts were £9605 0*s.* 1*d.* While the current account shows a small debt, a substantial addition has been made to the investments, which now stand at £24,715 15*s.* 11*d.* for the Royal Hospital, £8740 for the Convalescent Home and Children's Hospital, and £6583 10*s* for the Consumptive Department, making a total of £40,044 5*s.* 11*d.* Dr. Lindsay, who submitted and moved the adoption of the medical report, said that the staff felt very strongly on the question if the enlargement of the hospital, because if the increase in the demands upon the institution continued much longer it would be quite unable to meet them. Comparing the last year's work with that of a decade ago (1883), there had been 2404 intern patients as against 1599 in 1883, and 21,749 extern patients as against 10,514 in 1883

Death of Dr. Courtenay.

It is with great regret that I announce the death from influenza, on Nov. 19th, of one of the oldest medical practitioners in Ulster, Dr. Thomas Courtenay of Galgorm, Ballymena, co. Antrim. Dr. Courtenay became a M R.C.S. Eng. in 1836 and an M.D. Glasg. in 1846. He was for a very lengthened period medical officer of the Galgorm dispensary district and at the time of his decease was eighty-three years of age. He was greatly respected in the district for his kindness, skill, and extreme individuality of character.

Nov. 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Di-iodoform and the Treatment of Chancre.

EVERY surgeon must have arrived at the conclusion that as a dressing for soft chancres nothing equals iodoform; but the odour of this valuable compound militates greatly against its use, and attempts have accordingly been made to replace it by such iodine compounds as aristol, antiseptol, &c. Efforts have again been made to cover the odour of iodoform by means of coumarin, otto of rose, balsam of Peru, &c. Have we at last discovered the long-looked-for succedaneum in di-iodoform? MM Maquenne and Taine[1] have been recently engaged in investigating the properties of this new substance, which is an iodide of carbon, its ultimate analysis yielding: carbon, 4 62; iodine, 95 38. It is free from any trace of hydrogen and is remarkably rich in iodine It is insoluble in water and only slightly so in alcohol and ether; it is easily soluble in chloroform, sulphide of carbon, benzene, and especially hot toluene. It crystallises in fine prismatic needles, which are quite distinct from the hexagonal scales of iodoform. It remains practically odourless while it is kept in the dark. Exposed to the light it turns brown and disengages gradually a characteristic but slight odour. For this reason it is well to keep it in coloured bottles. It is a very stable compound, resisting the action of boiling nitric acid. Hot alcoholic solution of potassium alone decomposes it with formation of iodide of potassium. Di-iodoform is prepared by acting on periodate of acetylene with iodine in excess, as also by the action of liquor potassæ and iodine on barium carbide held in suspension in benzene or chloroform. M. Hallopeau is engaged in studying its therapeutical effects in his skin wards at St. Louis. He has tried it in cases of soft chancres and finds its effects to be identical with those of iodoform. *A propos* of the local treatment of simple chancres, Dr. Balzer of the Hôpital du Midi expresses himself as highly satisfied with the following method: wash the surface with a 1 in 1000 solution of corrosive sublimate or in a solution of boric acid, and then apply to the chancre on a thin dossil of ungreased cotton-wool some europhene. The surface soon becomes red

[1] Société de Thérapeutique, Nov. 8th, 1893.

and granulating, and cicatrisation is complete by the eighth or tenth day.

Convallaria Majalis.

At the same meeting of the Société de Thérapeutique Dr. Constantin Paul spoke of the above-mentioned drug. He stated that his long experience confirmed the good opinion held of its excellent effects as a myocardiac tonic. The effects become apparent gradually, the *summum* being attained in ten or twelve days after the commencement of the treatment. He rejects as uncertain some preparations of the plant—viz., convallarin, convallamarin, and the alcoholic extract—and recommends the exclusive employment of the watery extract, which he thus prescribes: thyme, 1 gramme; infuse for five minutes in 200 grammes of water and add 10 grammes of watery extract of convallaria and 90 grammes of syrup of orange peel; take daily 50 grammes for six consecutive days.

The Rate of Mortality at Marseilles.

The sanitary condition of this important seaport is a matter of moment to all French citizens, seeing that more than one epidemic of cholera has spread from it to the capital. It is accordingly unsatisfactory to learn that in 1892 the rate of mortality there was 28·4 per 1000, whereas in Paris the corresponding figure was 23·5 and at Lyons 22 7. Some improvement has, however, been effected, for during the years 1883 to 1892 the mortality had decreased from 31 2 to 28·4 per 1000.

Nov 21st.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Cholera at Havelberg.

DR. MÜLLET[1] attempts to show that the outbreak of cholera in October at Havelberg was due to an infection of the river either from unsuspected cases of cholera on the barges or to bilge water brought in the same way to Havelberg, and there, during an incidental halt, pumped out. If this be so, experience at Havelberg shows the extreme danger of water-ways as a means of spreading cholera, for there must always be great difficulty in controlling efficiently the spread of infection by barges. Professor Koch months ago said that the chief danger for Germany lay in the introduction of cholera through her water-ways, and there can be no doubt that the careful supervision of water traffic has been a chief factor in preventing serious outbreaks.

Tuberculin in Phthisis.

Shiess Bey and Kartulis[2] report 48 cases of tuberculous disease treated with tuberculin at Alexandria. In their hands tuberculin proved itself an excellent specific against tuberculosis. With an experience of 300 cases of phthisis yearly during several years the authors have never had such good results as they have obtained with tuberculin. The injections were made three times a week; the initial dose was usually 1–10 milligramme, which was gradually increased to 100 milligrammes. The remedy showed itself to be entirely free from danger if used with discretion, the chief points about its use being the careful selection of suitable cases and the gradual increase of dose, severe reaction being then avoided. Forty-eight cases were treated, 15 surgical and 33 pulmonary, and of these 16 were permanently cured. The authors conclude that commencing tuberculosis can with certainty be cured by tuberculin in three or four months, but that severe cases are not suitable for the treatment. Out-patient treatment, they think, can only be suitably applied to mild cases; and they attribute the good results obtained not to hospital care simply, because other cases of tuberculosis, not treated with tuberculin, did not make similar progress.

The Department of Diseases of Children at the Charité Hospital.

No successor has been at present appointed to take Professor Henoch's post. The medical faculty of the University select certain names, but the actual appointment is in the hands of the Government.

[1] Berliner Klinische Wochenschrift, No. 47.
[2] Zeitschrift für Hygiene, Band XV., Heft 2.

Obituary.

JAMES GALE BARFORD, M.R.C.S. ENG., L.R.C.P. LOND., F.C.S.

MR. JAMES GALE BARFORD was born in 1833 at Hurst, a few miles from Wokingham, in Berkshire, a neighbourhood which was the scene of his life's work. Entering St. Bartholomew's Hospital in 1852, he ultimately became senior scholar and house surgeon. He took his first qualification as Member of the Royal College of Surgeons of England in 1857 and soon afterwards settled down into medical practice at Wokingham, where he became a partner with his stepfather, Mr. Waite, who had been established in that town for many years. He speedily made his mark as a young man by his profound shrewdness and skill and by his close attention to detail in his work. An admirable clinical observer and therapeutist, his riper experience enabled him to take the first rank as a thoroughly capable and reliable practitioner, who had the power of securing the full confidence of his patients. Outspoken and of independent opinions, he from time to time thought it worth his while to break a lance with a willing critic; but to those who in the hour of trial and sorrow took counsel with him no one was more capable or more ready than Mr. Barford to supply the needed consolation or the thoughtful and vigorous advice. His appointment as medical officer to Wellington College within two or three years of his entering the profession was a token of his early promise and was calculated to secure, as it did, the confidence not only of the boys and the college staff but also of the parents. His fondness for chemistry led to his becoming a Fellow of the Chemical Society and Professor of Chemistry at Wellington College. He interested himself greatly in the welfare of the college, but the increase of his practice over very extensive districts and some friction with the authorities led to the severance of his connexion with it in 1883 after twenty-four years' work and intimate association with its development and progress. Eight years later questions of the college sanitation and drainage came prominently before the public, and Mr. Barford ventilated an expression of his opinion on these subjects in a series of outspoken letters in THE LANCET. About two years ago Mr. Barford suffered from a sharp attack of influenza, with considerable nervous depression. Last June he had a localised apoplectic seizure which necessitated his giving up work for several months. The day before his death—i.e., Nov. 8th—he rode to a meet of the hounds and was apparently as well as he had been for the previous weeks; but early in the evening an apoplectic attack came on, and with it right hemiplegia and complete unconsciousness. Curiously enough, he had told his son that his end would come in this way. Mr. Barford was a keen follower of the hounds and had been at the opening meet of the Queen's staghounds for fifty years. He had artistic tastes, and his collection of oil paintings, and more especially of Landseer's engravings, are both valuable and well-selected. He was twice married and leaves a widow and fourteen children. Mr. Barford will be greatly missed in and around Wokingham. He was a genial companion and a staunch friend, as well as an accomplished and capable physician. His local knowledge and acquaintance made him an attractive centre of information. He keenly enjoyed a joke, and his independent method was well illustrated on one occasion when a noble lord, asking him what his fee was for attendance upon an interesting domestic occasion, thought it well to preface his query by stating that the fashionable and eminent London accoucheur who usually officiated charged twenty guineas. "Twenty guineas he charges?" said Mr. Barford. "Well, my lord, I sha'n't increase it."

DR. CARLO PASTA.

MONTE GENEROSO, "the Rigi of Italian Switzerland," as from its magnificent prospect and its fine restorative air it has been happily called, has just lost Dr. Carlo Pasta, who died suddenly under distressing circumstances early in the present month. He was on his return from Bella Vista to the Vetta del Generoso—the health resort which he may be said to have created, and which for more than a quarter of a century he conducted to the satisfaction of an immense

clientèle—and had taken his seat in the train, accompanied by his daughter and a friend. Scarcely, however, had they left the station when the friend called out to the conductor from the window to stop the train, as Dr. Pasta had fallen in a fit. The train was stopped accordingly and backed into the station of Bella Vista, immediately after which Dr. Pasta was lifted out quite dead and deposited on a bed, for removal to his residence on Monte Generoso. There the cause of death was stated to have been "apoplessia fulminante." This is a severe loss to Italian Switzerland, which for many years has owed much of its popularity as a resort for the invalid and the overworked professional man to the knowledge, the skill, and the administrative capacity of Dr. Pasta. THE LANCET had already drawn attention to Monte Generoso and its almost unique advantages in point of situation and climate when Dr. Pasta brought it into line with the best establishments in Switzerland by the sanatorium he erected and organised. Year by year the public from both hemispheres had come in increasing numbers to appreciate the purity of its air "between lake and mountain," and the admirable opportunities of healthful recreation which its superintendent had devised and created, when the opening of the St. Gothard railway enlarged still further its capacities and its *clientèle*, to which finally a branch line from the plain below to the summit of the mountain itself largely contributed. All these innovations and improvements were Dr. Pasta's own, and he had already won the gratitude of his compatriots for the prosperity he had brought to the canton, besides earning the countenance and support of the professional world for his skill and care in following up the treatment of cases entrusted to him, when he was struck down in the height of his energies.

MEDICAL TRIAL.

THE DIFFICULTIES OF DIAGNOSING SMALL-POX.

A CASE illustrating the difficulties of diagnosing small-pox came before Mr. Curtis Bennett at the West London police-court on the 16th inst., when Mr. James David Hirst Smyth, Fielding-road, Bedford-park, appeared in answer to two summonses for failing to send notices to the medical officer of health of Kensington, under Section 55 of the Public Health (London) Act, 1891, of cases of infectious disease. It appeared that the defendant, who held the licence of the Society of Apothecaries, was called on Sept. 27th to attend a child named Maud Keen, aged twelve years, living at Portobello-road, Notting-hill, close to the defendant's surgery in Ladbroke-grove-road. The child had been unwell for some days, and had been kept away from school from the 20th of that month. On the 27th some spots were observed on her face, and the medical attendant was then sent for. The mother had previously got the impression that the illness was of so serious a nature that the child would have to be removed from home, and had prepared her for such an event. She mentioned this to Mr. Smyth when he saw the child; but he said it was a case of chicken pox, and the patient must not be removed. He continued visiting the child for eight or ten days, and she gradually recovered, but during the period Mr. Smyth told the mother that the illness was very severe. The child had been up and about—although she did not go to school again—for some three days when, on Oct. 11th, the father was taken ill. He seemed to get worse, and on Monday, the 16th, when some spots were observed upon his face, Mr. Smyth was again sent for. On seeing the patient he at once said it was the same disease as the daughter had had. He saw the patient on the following two or three days, but did not visit him on the Friday. Meantime some rumours had been spreading about the district, and on Saturday, the 21st, George Pettit, one of the sanitary inspectors specially appointed to pay attention to any cases of infectious disease in the parish, called and spoke to the wife. He saw the child and intimated that he thought the disease in the house was small pox, and that he should bring the medical officer of health. On that morning the patient seemed worse, and although he was not delirious the wife thought he was not right in his mind. Directly after the inspector had left she sent for Mr. Smyth, and on his arrival told him what had transpired at the inspector's visit, and asked him to tell her if it really was small-pox. He replied, "No; if it was he would be raving mad." On the following day, however, the patient was evidently worse, and the wife decided to call in Dr. Edwin Thomas Ensor of Chesterton-road, North Kensington. When sent to and informed that another practitioner had been attending, that gentleman declined to come until the first medical man had been told that his services would not be further required. A message dispensing with Mr. Smyth's services was then sent, and at eight o'clock in the evening Dr. Ensor saw the patient. The room was very dimly lighted and was very foul, so that Dr. Ensor did not stay long, but he saw that the man was unconscious and was dying. He told the wife that practically the case was hopeless, and immediately on leaving the house he notified to the sanitary inspector that the case was one of confluent small-pox. He also saw the child and formed the opinion that she, too, had had small-pox, and he deemed it his duty to notify to the sanitary inspector that she also was in an infectious state. Just after midnight of the same day the man died. On the day following the child was removed to the Asylums Board Hospital at Dartford, and she was still there at the time the case was before the court. It seemed that the body of the man was kept in the mortuary for three days with a view to an inquest being held, but the coroner did not deem one to be necessary, nor was advantage taken of the opportunity for a third medical man to see the body. It would have been thought that under the circumstances this at least would have been done, for Mr. Chambers Leete, the clerk to the Kensington Vestry, said that a small epidemic of small-pox had been raging in the northern part of the parish, and that a considerable number of cases in the neighbourhood were believed by the medical officer of health to be traceable to the two attended by Mr. Smyth. The defendant himself was called to give evidence, this being permissible under the Act of 1891, although not allowed by former Acts. He said that he had been attending the family on and off for some time. When he first saw the child the thought of small-pox crossed his mind, but he could not come to any other conclusion than that the child was suffering from chicken-pox. When he saw the man, taking all the circumstances into consideration, he was convinced that he, too, was suffering from chicken-pox. There were none of the premonitory symptoms of small-pox, no headache, no pyrexia, no pain in the epigastrium, and no pains in the back. There were spots on the body, some of them being congested; some were extravasated spots, or papules, and some two or three were vesicles. During all the time he attended the patient he was conscientiously convinced that it was not a case of small-pox. He had seen as bad an eruption as that the man had in a case of chicken-pox; it was not confluent. The eruption extended to the inside of the mouth, but he had known that to occur also in a case of chicken-pox. It did not occur to him that it was desirable to call in any further assistance. Dr. Ensor, in the course of his evidence, said that he did not think he should mistake small-pox for chicken-pox unless it was a very modified case; the case of the man Keen was not modified for it was a very bad case of confluent small-pox. When he looked at the child, although some four or five weeks had elapsed from the commencement of the illness, the appearance of her skin satisfied him beyond doubt that she had had small-pox; the appearance differed from what it would have been in a case of chicken-pox. A letter which the defendant had written to the Kensington vestry was read by his worship, in which he maintained his opinion that death was not due to small-pox, and he said he thought the man had died from fright, be having a presentiment that he was suffering from small-pox and that it would be fatal. Mr. Grain, who, with Mr. Knox, defended, urged that the defendant could not be convicted under the Act, inasmuch as it only applied to a practitioner who had "become aware" that the patient was suffering from an infectious disease, or who had been guilty of such gross and culpable negligence that if the case were one of manslaughter the magistrate would be justified in sending him for trial before a jury. This, he said, could not be shown to have occurred in connexion with this case. Mr. Curtis Bennett remarked that it was important from the point of view of the general public, as well as of the medical profession, that the proper interpretation should be given to the Act; he therefore postponed his decision.

Medical News.

UNIVERSITY OF LONDON.—The following have passed the M.B. Examination, October, 1893:—

FIRST DIVISION.

Armstead, Hugh Well-, University College and St. Bartholomew's Hospital.
Carwardine, Thomas, Middlesex Hospital and University College.
Clegg, John Gray, Owens College and Manchester Royal Infirmary.
Davies, Howard Owen, St. Bartholomew's Hospital.
Felkin, Henry George, London Hospital.
Gibbs, Seymour Farrage, St. Bartholomew's Hospital.
Howard, John Alexander, Guy's Hospital.
Jaffé, Charles Samson, St. Thomas's Hospital
Johnson, William John, Guy's Hospital.
Jones, Lillie Mabel A., London School of Medicine and Royal Free Hospital.
Leumann, Bernard Henry Frederick, St. Bartholomew's Hospital.
Little, Ernest Graham Gordon, St. George's Hospital.
Morrison, James, St. Bartholomew's Hospital.
Morton, John Leyden, St. Mary's Hospital.
Nathan, Edward Albert, St. Mary's Hospital.
Nuttall, Arthur Peel, University College.
Pickels, Joseph Arthur, Owens College and Manchester Royal Infirmary.
Potts, William James, Owens College and Manchester Royal Infirmary.
Rock, Frank Ernest, Middlesex Hospital.
Rogers, Kenneth, St. Bartholomew's Hospital.
Soden, Wilfred Newell, St. Bartholomew's Hospital.
Symes, John Odery, St. Mary's Hospital.
Thomson, Herbert Campbell, Middlesex Hospital.
Wainwright, William Longworth, St. Thomas's Hospital.
Warrington, William Barnett, Owens College and Manchester Royal Infirmary.
Woollett, Charles Jerome, Charing-cross Hospital.

SECOND DIVISION.

Ashley, Martin, University College.
Bathurst, Lullum Wood, St. Bartholomew's Hospital.
Branson, William, Sheffield and University College.
Brown, Stanley Mewburn, Owens College and Manchester Royal Infirmary.
Bunch, John LeMare, B.Sc., University College.
Chaning-Pearce, David A., Guy's Hospital.
Collings, Dudley Willis, St. Bartholomew's Hospital.
Crowley, Ralph Henry, St Bartholomew's Hospital.
De Korté, William Edmond, Guy's Hospital.
Dickinson, James, Westminster Hospital.
Eves, Percy Stanhope, University College.

Griffiths, John Howell, St. Bartholomew's Hospital.
Iredale, Joseph Leonard, Yorkshire College.
Jeans, Thomas Tendron, Owens College and Manchester Royal Infirmary.
Jerome, George Percy, Queen's College, Birmingham.
Kirkpatrick-Picard, Arthur William, University College.
Lane, Clayton Arbuthnot, St. Mary's Hospital.
Lewis, Frederick William, St. Mary's Hospital.
Murrell, George Frederick, St. Bartholomew's Hospital.
Perram, Edward Arthur, St. Bartholomew's Hospital.
Piercy, Ann Frances, London School of Medicine and Royal Free Hospital.
Piper, Francis Parris, St. Mary's Hospital.
Powell, Thomas Morgan Jones, St. Bartholomew's Hospital.
Smyth, Ernest Jackson, B.Sc., University College.
Stedman, Thomas Bernard, University College.
Tildesley, Josiah P., Queen's Hospital and College, Birmingham.
Travers, Frederick Thomas, University College.
Viret, Benjamin Pope, St. Bartholomew's Hospital.
Wells, Sydney Russell, B.Sc., St. George's Hospital.
Whitaker, J. Ryland, B.A., University College.
Wilson, Arthur Edward, St. Mary's Hospital.
Wright, Sydney Faulconer, St. Thomas's Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following Licentiates of the Royal College of Physicians of London, having passed the necessary Examinations and having conformed to the by-laws and regulations, were at the ordinary meeting of the Council admitted Members of the College, viz. :—

Ainsworth, Hugh, Owens College and Royal Infirmary, Manchester.
Ambler, John Richardson, University College and Royal Infirmary, Liverpool.
Arnold, Gilbert James, St. Thomas's Hospital.
Baldwin, Gerald Robert, St. George's Hospital.
Ballard, Robert, King's and University Colleges and St. Bartholomew's Hospital.
Beddy, Thomas Alfred, Trinity College, Dublin, and Middlesex Hospital.
Berry, Robert Sewers, St. George's Hospital.
Biggs, John James Egerton, Guy's Hospital.
Bishop, John Ramsay, Owens College and Royal Infirmary, Manchester.
Blandford, Joseph John Guthrie, Cambridge University and St. Bartholomew's Hospital.
*Boyd, James, L.R.C.P. Edin., St. Mungo's College and Glasgow University.
Bruce, William James, London Hospital.
Buchanan, Archibald Graham, Guy's Hospital.
Burch, Henry Edwin, London Hospital.
Campbell, Robert, Queen's College and Royal University, Belfast.
Collyer, Brice, St. Bartholomew's Hospital.
Corben, Charles, St. Bartholomew's Hospital.
Cowen, George Hebb, London Hospital.
Cross, Ernest William, St. Bartholomew's Hospital.
Crowther, Charles Keith, St. Bartholomew's Hospital.
Davies, John Lloyd, University College Hospital.
Dawkin, George Mansell, London Hospital.
De Korté, William Edmond, Guy's Hospital.
Dickson, Harry Arthur David, St. Thomas's Hospital.
Durell, Robert Edward, King's College Hospital.
Eastment, John Willot, Guy's Hospital.
Eatock, John Albert, University College and Royal Infirmary, Liverpool.
Feaver, Lewis, St. Bartholomew's Hospital.
Ferguson, Arnold Samuel, Middlesex Hospital.
Fido, Herbert Adamson, Grant Medical College, Bombay, and Guy's Hospital.
Finnie, John Ellison, St. Mary's Hospital.
Foster, James, Owens College and Royal Infirmary, Manchester.
France, Charles Frederic, Owens College and Royal Infirmary, Manchester.
Galizia, Joseph Sylvester, Malta University and London Hospital.
Gill, Samuel Ernest, St. Bartholomew's Hospital.
*Godfrey, Horace Percy, M.B., B.S. Melb., Melbourne University.
Godson, Leonard Joseph, St. Bartholomew's Hospital.
Goldney, Thomas William, Charing-cross Hospital.
Good, Thomas Saxty, St. George's Hospital.
*Green, William Frederick Liddon, L.S.A., King's College Hospital.
Grove, William Reginald, Cambridge University and Guy's Hospital.
Harper, John, St. Thomas's Hospital.
Hartley, Francis William, Owens College and Royal Infirmary, Manchester.
Hayes, Joseph, McGill College, Middlesex, and King's College Hospital.
Helby, Ernest Hasler, Middlesex Hospital.
Hoare, William Wallis, Royal Infirmary, Edinburgh.
Hobart, Nathaniel Henry, St. Bartholomew's Hospital.
Houlton, Ernest Henry, Yorkshire College and General Infirmary, Leeds.
Hovenden, Arthur Cecil, Guy's Hospital.
Howard, John Alexander, Guy's Hospital.
Hudleston, Wilfred Edward, Middlesex Hospital.
Hudson, Arthur, University College, Bristol, and Charing cross Hospital.
Humphry, Edward Scott, St. Bartholomew's Hospital.
Hunt, Ernest, Guy's Hospital.
James, Stanlake, St. Thomas's Hospital.
Jewell, William Henry, Guy's Hospital.
Jones, Philip Napier, St. Mary's Hospital.
Kempe, Charles Gilbert Burrington, College of Medicine, Durham University.
Kirkby, Robert Casement, Guy's Hospital.
Kynsey, Herbert Arthur, University College Hospital.
Lane, Clayton Arbuthnot, St. Mary's Hospital.
Langworthy, William Southmead, University College Hospital.
Ligertwood, Walter Hood, University College and Royal Infirmary, Bristol.
Lock, George Haylett, Middlesex Hospital.
McCleland, Hugh Augustus, St. Mary's Hospital.
McDougall, Alan, Owens College and Royal Infirmary, Manchester.
Maingay, Henry Bertram, St. Bartholomew's Hospital.
Manning, Guy Eugene, Guy's Hospital.
Manning, Thomas Davys, Guy's Hospital.
Mathew, Charles Montague, St. George's Hospital.
May, George Ernest, London Hospital.
Melville, Stanley, University College and Royal Infirmary, Liverpool.
Meyrick-Jones, Hugh Meyrick, Durham University and Guy's Hospital.
Morris, Cyril George, University College and Royal Infirmary, Bristol.
O'Leary, Richard, St. Bartholomew's Hospital.
Paterson, Peter, Glasgow, Berlin and Paris Universities.
Peacock, William Francis, St. Mary's Hospital.
Pearce, David Arnold Chaning, Guy's Hospital.
Pendred, Vaughan, Guy's Hospital.
Perkins, Henry Campbell, King's College Hospital.
Perry, Cranley Martsn, Edinburgh University and King's College Hospital.
Poynton, Frederick John, St. Mary's Hospital.
Probyn, Percy John, Charing-cross Hospital.
Quay, Frederick Aiken William, Trinity College and General Hospital, Toronto.
Quayle, Edwin, Owens College and Royal Infirmary, Manchester.
Rawlings, John Dunnell, St. Bartholomew's Hospital.
Reid, Arthur Listock, St. Bartholomew's Hospital.
Reid, John Buchanan, M.D. Toronto, Toronto University and University College Hospital.
Richards, Walter Guyon, Cambridge University and St. Bartholomew's Hospital.
Roberts, Alfred Dean, Westminster Hospital and Royal Infirmary, Manchester.
Rock, Frank Ernest, Middlesex Hospital.
Rostant, André Arsene, Bristol Infirmary and St. Thomas's Hospital.
Roydon, William, St. Bartholomew's Hospital.
Russell, Alfred Ernest, St. Thomas's Hospital.
Ryall, Edward Canny, Westminster Hospital.
Scott, Arthur William, Yorkshire College and General Infirmary, Leeds.
Seed, William Pope, Middlesex Hospital.
Selby, John Samuel Ernest, St. Bartholomew's Hospital.
Shillitoe, Arthur, Cambridge University and Guy's Hospital.
Sinigar, Harry, Masons College and General Hospital, Birmingham.
Skeels, William, Cambridge University and Middlesex Hospital.
Smith, Alfred Egerton Manners, St. Bartholomew's Hospital.
Smyth, Ernest Jackson, University College Hospital.
Spink, Ernest William, Yorkshire College and General Infirmary, Leeds.
*Staunton, Henry Foster, M.B. Madras, Madras University.
Stewart, Edward Simmons, Yorkshire College and General Infirmary, Leeds.
Stoddart, William Henry Butter, University College Hospital.
Swinhoe, George Rodway, St. Thomas's Hospital.
Travers, Frederick Thomas, University College Hospital.
Turner, Percy Edward, St. Bartholomew's Hospital.
Wallace, Robert FitzHenry Stanley, Charing-cross Hospital.
Webb, John Curtis, Cambridge University and King's College Hospital.
Webster, Frank Beaumont, Owens College and Royal Infirmary, Manchester.
Whait, John Robert, University College Hospital and Edinburgh University.
Whiteman, Wilfred Augustus Dixon, Middlesex Hospital.
Whitling, Henry Townsend Makepeace, St. Bartholomew's Hospital.
Wilkin, Robert Hugh, St. Bartholomew's Hospital.
Woodhead, Thomas Fielding, University College Hospital.
Worth, Erskine Herbert, St. Thomas's Hospital.

The names to which an asterisk is prefixed are those of gentlemen who do not possess the licence of the College.

The following gentlemen passed the First Professional Examination in Anatomy and Physiology for the Diploma of Fellow, at a meeting of the Board of Examiners on Wednesday, the 15th inst, viz. :—

Messrs. William Watson Griffin, M.R.C.S.Eng., M.B. New Zeal., of Otago Medical School, New Zealand, and London Hospital; Charles Edward Alexander MacLeod, M.R.C.S.Eng., L.R.C.P.Lond., of Westminster Hospital; Edward Marrack Hainworth, M.R.C.S.Eng., L.R.C.P.Lond., of St. Thomas's Hospital; Frank Belben, M.R.C.S.Eng., L.R.C.P.Lond., of Cambridge University and St. Bartholomew's Hospital; Henry Gwynn Lawrence, of St. Mary's Hospital; Frederick James Watson, of Cambridge University and St. George's Hospital; and James Patrick O'Hea, of St. George's and St. Bartholomew's Hospitals. Eight candidates were referred back to their professional studies for six months.

Passed on Thursday, the 16th inst. :—

Messrs. Thomas Hugh Boyd, M.R.C.S.Eng., M.B., B.S.Melb., of Melbourne University and University College; Alfred William Sanders, of St. Mary's Hospital; and Ernest Smallwood Savage, of Oxford University and London Hospital. Six candidates were referred back to their professional studies for six months.

UNIVERSITY OF CAMBRIDGE.—The examinations for medical and surgical degrees for the present Michaelmas term have been arranged as follows :—First Examination for M.B. and B.C. : Part 1 (Chemistry and Physics) to commence on Friday, Dec. 8th ; Part 2 (Elementary Biology) on

Monday, Dec. 11th. Second Examination: Part 1 (Pharmaceutical Chemistry) to begin on Thursday, Dec. 14th; Part 2 (Human Anatomy and Physiology) on Friday, Dec. 8th. Third Examination: Part 1 to commence on Tuesday, Dec. 12th; Part 2 on the same day. For the degree of M.C. the examination will commence on Friday, Dec. 15th. Other particulars of these examinations may be obtained from the Registrar.

AT a general meeting of the students of the Middlesex Hospital held on Thursday morning last, the Dean, Dr. Sidney Coupland, presiding, Mr. Herbert Charles was presented with the Royal Humane Society's certificate for his bravery in saving the life of a man who was nearly drowned while bathing at Shanklin, in the Isle of Wight, on Aug. 9th of this year. Mr. Charles, seeing the man drowning, ran out of his house and plunged into the sea with all his clothes on, and at the risk of his own life he succeeded in rescuing the drowning man. It was at the request of the Royal Humane Society that the presentation was made in public.

THE WORTHING SEWERAGE QUESTION.—At a meeting of the Worthing town council on Tuesday a new scheme of sewerage for the town, as a result of the recent epidemic of enteric fever, was discussed. Mr. James Manseigh, in whose hands as engineer the matter lies, reported in favour of a new system in the southern portion of the town, from west to east, ventilated by shafts, and discharging its contents during the four hours' eastward flow of the tide during each twelve hours. Steam plant is recommended for lifting the sewage and rain water into million-gallon open tanks, discharging through a twenty-seven inch outfall beneath the surface of the sea at low water. Provision is made to prevent tide-locking even during heavy and continuous rain, and also to allow of the subjection of the sewage to chemical action before discharge if it may be thought to be desirable at any future date. The estimated cost of the whole is £36,000. The council decided without a dissentient vote to adopt the scheme and to apply for permission to borrow the sum required.

BEQUESTS AND DONATIONS TO HOSPITALS.—The London Court of Common Council has made grants of 100 guineas each to the Charing-cross and King's College Hospitals and 25 guineas to the St. John Ambulance Association.—In addition to a special bequest of £500 to the Poplar Hospital, the late Mr. George Tourneer left instructions for the residue of his estate to be divided equally between the London Hospital, the Royal London Ophthalmic Hospital, Moorfields, St. Mark's Hospital for Fistula, City-road, King's College Hospital, and the Royal Free Hospital, Gray's-inn-road.—The Earl of Leicester has presented £2000 to the Norfolk and Norwich Hospital, in addition to a previous endowment of £15,000. Mr. W. Waring, of Taverham Hall, Norfolk, has transferred to the same Hospital £1000 of railway stock. The same institution has become a reversionary legatee to the extent of £1000 under the will of the late Rev. W. F. Thursby, sometime rector of Castle Rising.—Mr. Charles Rogers Coxwell, late of South Bank, Great Malvern, bequeathed £100 to the Malvern Rural Hospital.—The late Mr. Samuel Farley, of Lordship-road, Stoke Newington, bequeathed £3000 each to the East London Hospital for Children and Dispensary for Women and the Middlesex Hospital.—Mr. George Samuel, late of Park-crescent, Portland-place, London, bequeathed £1000 to the Queen Charlotte's Lying-in Hospital.—Mr. Simeon Warburg, late of Bassett-road, North Kensington, bequeathed £400 each to the London Hospital, the Metropolitan Hospital, Kingsland-road, the London Fever Hospital, Liverpool-road, Islington, the Royal Free Hospital, Gray's-inn-road, the London Royal Ophthalmic Hospital, Moorfields, and the Orthopædic Hospital, Hatton-garden; and £200 each to the Hospital for Sick Children, Great Ormond-street, and the Central Throat and Ear Hospital, Gray's-inn-road.—The proceeds, amounting to £224, of the Friendly and Trade Societies' fête on the opening day of the Corbett Hospital, Stourbridge, have been handed over to the hospital authorities.—The trustees of the Muntz Trust have made grants for the year 1893 to the following institutions in Birmingham—viz.: £250 to the Queen's Hospital, £150 to the Children's Hospital, £25 each to the Orthopædic Hospital and the Lying-in Charity, and £50 each to the Women's Hospital and the District Nursing Society.

THE PARKE MEMORIAL FUND.—We desire to again call attention to the Parke Memorial Fund. There can, we feel certain, be but one opinion—not only in the minds of the medical profession but in those of the public at large—as to the desirability of organising in some form or other a permanent tribute to the memory of one of the most conspicuous heroes of Stanley's expedition for the relief of Emin Pasha. The committee for this purpose make their appeal to the public without reference to creed, class, or politics, and we hope that the profession of which Surgeon-Major Thomas Heazle Parke was so noble a representative will set an example of generosity in their response.

MEDICAL DEFENCE UNION.—The fortnightly meeting of this union took place on Wednesday, the 8th inst. There was a large attendance of the Council present, Mr. Victor Horsley, F.R.S., President, in the chair. Many applications for advice were received and dealt with, and nine new members were elected.—Dr. Danford Thomas reported the successful results which had been arrived at in a dispute between two members which had been referred by the Council to his arbitration, and the thanks of the Council were accorded to him for his able and satisfactory conduct of the case.—A matter was ordered to be reported to the Council of the Royal College of Surgeons, England, for their consideration, and the question of certain quack advertisements in the public press was referred to a subcommittee, with directions to bring it before Mr. Lockwood, Q.C., M.P.—A vote of condolence with Lady Clark and family on the great loss they had sustained was passed, and the President was requested to forward the same to Lady Clark.—The report of the subcommittee *re* amalgamation with another society was dealt with.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, NOV. 16TH.

Gratuitous Revaccination.

IN answer to Mr. W. McLaren, Sir Walter Foster stated that he was aware of the notice which had been issued by the guardians of the Barton Regis union, Bristol, in respect of an outbreak of small-pox that had occurred in their district, and in which notice it was stated that gratuitous revaccination was offered to persons within the union who were over ten years of age. The guardians had, he said, a clear legal right to pay for revaccinations by the public vaccinators which had been performed by them in accordance with the regulations.

MONDAY, NOV. 20TH.

Cinchona and Quinine.

In reply to a question put by Mr. Caine, who desired to know the quantity of cinchona, in bulk and in its preparations, which had been sold by the superintendent of the Botanic Gardens in Calcutta from 1886 to 1892, Mr. G. Russell stated that during the seven years specified 5520 lb. of quinine and 3650 lb. of cinchona febrifuge had been sold from the factory near Darjeeling to the medical department and to the public, at the price of one rupee an ounce for the former and of ten annas an ounce for the latter.

Classification of Immigrant Aliens.

Mr. Powell Williams wished to know whether any attempt had been made to classify aliens arriving at London and Hull, and whether a return could be given of the number of destitute or diseased immigrants who had landed in this country during the last six months.—Mr. Mundella replied that such classification was carried out, and returns showing the particulars referred to, with the exception of the nationalities, were published annually in the reports issued by the Board of Trade. Other particulars could be obtained from the Customs department.

The Army Medical Department and Surgeon-Captain Sawyer.

Mr. D. Plunket called the attention of the Secretary of State for War to the case of Surgeon-Captain Sawyer and asked why the recommendation of Lord Campbell's Committee of 1889, to the effect that "medical officers on leave, in consequence of disease contracted in and by the Service, should be entitled to the same privileges as combatant officers," had not been carried out, and whether the case of that officer would be reconsidered.—Mr. Campbell-Bannerman said that full effect had been given to the recommendation; but it could not be made retrospective, and since Surgeon-Captain Sawyer's time on half-pay did not at that time count as service for promotion, although it would now do so, he was afraid nothing could be done in his case.—Mr. Plunket then inquired whether any steps had been taken to secure to the Army Medical Service opportunities for acquiring practical experience in field duties, to which Mr. Campbell-Bannerman replied that next summer steps would be taken to afford a fortnight's instruction in the duties mentioned.

The Proposed Fever Hospital at Grangewood.

This matter was brought forward by a question put to the President of the Local Government Board by Mr. Fisher, who wished to know why the inhabitants of the district in which the proposed fever hospital was to be built had not received more than a week's notice of the intention to hold an inquiry into the matter.—Mr. H. Fowler said that

notices of the inquiry referred to were issued by the Local Government Board on the 10th inst., so that they might be posted on church and chapel doors in the neighbourhood of Norwood in the ordinary way. The Board had no definite information as to the quarter whence opposition to the proposal might be expected, save that a communication had been received from the town council of Croydon objecting to the suggested site.

TUESDAY, NOV. 21ST.

Pleuro-pneumonia.

In answer to a question put by Mr. Lough, Mr. Gardner said he proposed to issue orders to regulate the movement of cattle and carcases out of registered cowsheds in London and certain parishes in the county of Middlesex. He hoped by that means to obviate the necessity of taking more stringent measures at this season of the year.

Committal under the Vaccination Acts.

By a question addressed to the Home Secretary, Mr. D. B. Jones called attention to the committal at the Stroud petty sessions on the 16th inst. of some sixteen persons for non-payment of fines inflicted for offences against the Vaccination Acts and asked whether, having regard to the fact that the final report of the Commission on Vaccination had not yet been published, he would recommend Her Majesty to pardon or order the release of the persons so committed.—Mr. Asquith said that the facts were as stated in the question. Some of the cases appeared to have been second prosecutions for a single offence, and the Government had introduced a Bill to effect an alteration in this respect. He had no power, however, to interfere with the decision of boards of guardians, and if he were to remit the penalties or release the persons committed he would be virtually repealing an Act of Parliament. In answer to Mr. Picton, the right hon. gentleman stated that he could not undertake to prevent prosecutions in all cases in which it appeared likely that proceedings would not avail to induce parents to have their children vaccinated.

THURSDAY, NOV. 23RD.

The Old Coldbath Fields Prison.

In reply to questions by Mr. Walter McLaren and Mr. Graham, Mr. Arnold Morley stated that his attention had been called to the death of Mr. A. C. Pemberton, a first-class clerk in the Money Order Office, now located in the old Coldbath Fields Prison, and after careful inquiry he had no doubt that Mr. Pemberton's death arose from a chill contracted by him while on holiday and could not be attributed to the building in which his official duties were discharged. He was aware, however, that complaints had frequently been made as to the "stuffy or draughty" state of the building, and, having regard to all the circumstances, it would be satisfactory that its sanitary condition should be thoroughly investigated. He proposed, therefore, to appoint a small commission upon which Lord Playfair had been good enough to consent to act.

The Wiltshire Manœuvres.

In answer to Mr. Alpheus Morton, Mr. Campbell-Bannerman said that at the recent Wiltshire manœuvres there was an ambulance for each brigade, and it was used when required. No movable bearer companies were employed in the manœuvres, but there were two field hospitals. He might inform the hon. gentleman that a fortnight's special instruction in medical field duty would be given next summer. The autumn manœuvres did not afford a convenient opportunity for this instruction.

Diphtheria in the Regent's-park Barracks.

In reply to a question by Mr. Hulse, Mr. Campbell-Bannerman said he had been informed of cases of diphtheria and sore-throat at these barracks, and he had caused inquiry to be made. The drainage system generally was found to be of proper construction and in good working order.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

BENNETT, L. H., M.B., B.Ch. Oxon., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Ilsley Sanitary District of the Wantage Union.

BERRY, F. C., M.D., B.S. Dubl., has been appointed Medical Officer of Health for Burnham, vice Peskett, resigned.

BOYD, J. A., M.B., C.M., Glasg., has been appointed Assistant Medical Officer to the Belvidere Fever Hospital, Glasgow.

BROWN, JOHN, M.D., D.S.Sci. Viet., has been reappointed Medical Officer of Health to the Bacup Town Council; also Physician to the Southall Fever Hospital.

COWAN, M. W. W., M.B., M.S., has been appointed Medical Officer for the Leigh Sanitary District of the Martley Union.

CRUMP, J. ARTHUR, L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Medical Officer to the Wye House Asylum, Buxton.

FORT, THOS., has been appointed Surgeon to the Oldham Borough Police.

HUNTER, J. H., M.B., B.S. Dunelm, of Newcastle-on-Tyne, has been appointed Junior House Surgeon to the Ingham Infirmary, South Shields.

LENDRUM, J. B., M.B., M.S. Aberd., has been appointed Senior House Surgeon to the Huddersfield Infirmary.

LEWIS, J. W., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Quarter Back Sanitary District of the Llandilofawr Union.

LIGHTBODY, JOHN HENRY, M.D. Viet., M.R.C.S., L.R.C.P., L.S.A., has been appointed Medical Officer and Public Vaccinator to the Wrybunbury District of the Nantwich Union, vice G. L. Travis, resigned.

MCDONNELL, W. C., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Sixth Sanitary District of the Hackney Union, vice Hoskings, resigned.

MINTON, A. H., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the South Sanitary District of the Stratton Union.

MORROW, J. S., M.B., B.Ch. Irel., has been appointed Honorary Assistant Surgeon to the Children's Hospital, Belfast, vice Byers resigned.

PATON, THOS. J., M.B., C.M. Edin., has been appointed Medical Officer for the Kilham Sanitary District of the Driffield Union, vice Sutcliffe, deceased.

SCALE, T. W., M.R.C.S., has been appointed Registrar of Births and Deaths for the District of Aberdare.

TILLEY, HERBERT, M.D., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Junior Assistant Surgeon to the London Throat Hospital, Great Portland-street, W.

TURNER, J. A., M.B., C.M. Edin., D.P.H. Camb., has been re-appointed Medical Officer of Health for the Hinckley Union Sanitary District.

WHITE, O. M., M.R.C.S., has been appointed Medical Officer for the Eltham Sanitary District of the Lewisham Union, vice King, resigned.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRADFORD TEMPORARY SMALL-POX HOSPITAL.—Resident Medical Officer. Salary at the rate of £150 per annum, with board, lodging, and washing. Applications to the Medical Officer of Health, Town Hall, Bradford.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, London, S.W.—Resident Medical Officer, for one year. Salary £80 per annum, with board and residence.

CHESTER GENERAL INFIRMARY.—House Surgeon, for two years. Salary to commence at £90 per annum, rising £10 annually, with residence and maintenance in the house. £5 per annum granted for taking charge of the Library.

CHURCH OF SCOTLAND'S MISSION AT ICHANG, CHINA.—Medical Missionary. Applications to Rev. John McMurtrie, D.D., 22, Queen-street, Edinburgh.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—House Physician, for six months. Board and residence and allowance for washing provided. Applications to the Secretary at the office, 24, Finsbury-circus, E.C.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—District Surgeons for Upper Holloway and N. Division of Bethnal-Green, including Hackney.

DUDLEY DISPENSARY.—Resident Medical Officer. Salary £130, with increase at the end of twelve months if services satisfactory; good house (furnished, except beds, and bed- and house-linen), coals, gas, and water found, and all rates and taxes paid.

EAST LONDON HOSPITAL FOR CHILDREN, Glamis-road, Shadwell, E.—House Surgeon. Board and lodging provided.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Two Assistant Physicians to see out-patients.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Pathologist and Registrar.

EDMONTON UNION.—Medical Officer for the District of Cheshunt. Salary £70 per annum, and 20 per cent. thereon in lieu of payments for expensive medicines, with extra fees prescribed by the Orders of the Local Government Board. He will also be appointed Public Vaccinator at the remuneration of 1*s.* 6*d.* for each case of successful primary vaccination. Applications to Mr. Shelton, Solicitor and Clerk, 808, High-road, Tottenham.

GLASGOW EYE INFIRMARY.—Resident Assistant House Surgeon. Salary £50, with apartments and board.

HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, London.—Honorary Assistant Physician.

HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, London.—Honorary Assistant Surgeon.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, Bloomsbury, W.C.—Assistant House Surgeon, non-resident, for six months. Salary £20.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, Bloomsbury, W.C.—Assistant Physician.

HOSPITAL OF ST. PETER, Port Guernsey.—Surgeon, for one year. Salary £50 per year currency (vaccination included), in addition to which a certain vaccination allowance will be made.

KIMBERLEY HOSPITAL, South Africa.—Senior House Surgeon. Salary £650 per annum, with unfurnished quarters for a single man. Applications to Mr. H. A. de Beer, secretary, Kimberley, South Africa.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, N.E.—House Surgeon, for six months. Salary at the rate of £60 per annum.

ROYAL FREE HOSPITAL, Gray's-inn-road, W.C.—Senior Resident Medical Officer, for one year. Salary £100 per annum, with board, residence, and washing.

ROYAL BERKS HOSPITAL, Reading.—Physician.

SEAMEN'S HOSPITAL SOCIETY, *Dreadnought*, Greenwich.—House Surgeon for Branch Hospital, Royal Victoria and Albert Docks, E. Salary £75 per annum, with board and residence.

ST. GEORGE-IN-THE-EAST PARISH.—District Medical Officer for the No. 3 district. Salary £110 per annum. Applications to the Clerk, Guardians' Office, Raine-street, Old Gravel-lane, E.

SUNDERLAND INFIRMARY.—Honorary Surgeon.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.—Resident Assistant, for six months. Board, lodging, and washing provided.

Births, Marriages and Deaths.

BIRTHS.

CASSIDI.—On Nov. 18th, at Trinity-terrace, Derby, the wife of F. Cassidi, M.D., of a son.

DIXEY.—On Nov. 19th, at Woodgate, Malvern, the wife of Harry E. Dixey, M.D., of a son.

HILLIER.—On Nov. 17th, at Paddington Infirmary, Harrow-road, W., the wife of T. Ernest Hillier, M.A., M.B., Medical Superintendent, of a son.

RENTON.—On Nov. 15th, at Rothesay-place, Edinburgh, the wife of David Renton, M.D., Hon. Brigade-Surgeon, of a daughter.

ROBERTS.—On Nov. 21st, at Bradford, Yorks, the wife of William Lake Roberts, Surgeon, of a daughter.

SEAMAN.—On Nov. 20th, at Stalbridge Rectory, Dorsetshire, the wife of Surgeon-Lieutenant-Colonel Albert Seaman, Indian Medical Service, of a daughter.

STEDMAN.—On Nov. 21st, at Towcester, Northamptonshire, the wife of Herman Stedman, M.D., L.R.C.P., L.R.C.S., L.F.P. & S.G., of a son.

THOMSON.—On Nov. 12th, at Perry, Chartham, the wife of Surgeon-Major S. J. Thomson, of a daughter.

WARREN.—On Nov. 18th, at Home Villa, Headcorn, Kent, the wife of Dr. P. Somerville Warren, of a daughter, stillborn.

MARRIAGES.

BERRIDGE—CUBITT NICHOLS.—On Nov. 15th, at Christ Church, Woburn-square, William Robert Morpott, L.R.C.P., M.R.C.S. Eng., second son of Robert Bristow Berridge, Solicitor, Leicester, to Eliza Haywood, fifth daughter of Daniel Cubitt Nichols, of Brunswick-square, W.C.

HARVEY—HARRIES.—On Nov. 4th, at St Olave's, Southwark, Harold Harvey, Esq., M.R.C.S., L.R.C.P., second son of the late Joshua Harvey, Esq., of Haverfordwest, to Emily Jane, youngest daughter of George Harries, Esq., of Rickestone Hall, Pembrokeshire.

MACLENNAN—GREY.—On Nov. 16th, at the Parish Church, Acton, Middlesex, Andrew Anderson Maclennan, M.B., C.M., of Lerwick, Shetland, to Emma, only daughter of F. H. Grey, Mill-hill-grove, Acton.

RAYNER—ANDERSON.—On Nov. 15th, at Christ Church, Lancaster-gate, by the Rev. C. J. Ridgway, Vicar of the Parish, assisted by the Rev. Moore Neligan, Herbert E. Rayner, F.R.C.S. Eng., formerly of Colchester, son of the late John Rayner, Esq., to Jessie Mary (Marie), only daughter of the late William Anderson, Esq., of Glentarkie, N.B., and of 68, Porchester-terrace, Bayswater, W.

WEBB—NODES.—On Nov. 15th, at Christ Church, Woburn-square, Cholmondeley Webb, M.R.C.S. Eng., L.R.C.P., L.S.A. Lond., son of Edward Lowe Webb, M.R.C.S. Eng., M.R.C.P. Edin., of St. George's-road, S.W., to Dorothy Scott Sydenham, younger daughter of the late Sydenham Nodes, of 16, Upper Bedford-place, Russell-square.

DEATHS.

BRODRIBB.—On Nov. 17th, at Colne, Lancashire, Francis Benjamin BRODRIBB, M.R.C.S., aged 45 years.

GILBERTSON.—On the 18th inst., at Starkie-street, Preston, Joseph Bray Gilbertson, M.D., J.P., Coroner for Lancashire, in his 68th year.

GUPPY.—On Nov. 18th, at Falmouth, Thomas Stokes Guppy, M.D., aged 74.

MILLER.—On Nov. 19th, at his residence, Kenton, Blacklands, Hastings, in his 81st year, Claudius Montague Miller, M.D., for many years in general practice at Stoke Newington. He passed away peacefully, much beloved and deeply respected. Interment at the Borough Cemetery, Ore, Hastings, on Friday, Nov. 24th, at 3.15. Service at Blacklands Church, 2.40.

WEBB.—On Nov. 15th, at Mentone, Surgeon-General Vere Webb, of Scarsdale-villas, Kensington, aged 76.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, November 23rd, 1893.

	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Dry Bulb.	Wet Bulb.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Rainfall.	Remarks at 8.30 A.M.
Nov. 17	29·16	S.W.	56	56	70	59	45	·03	Raining
,, 18	29·04	N.W.	46	46	46	42	42	·17	Cloudy
,, 19	29·41	N.E.	34	34	45	43	32	·22	Snowing
,, 20	29·96	N E	43	42	55	45	33	·21	Cloudy
,, 21	30·40	N.E.	41	40	59	47	40	..	Overcast
,, 22	30·17	S.W.	40	39	51	47	39	—	Overcast
,, 23	30·05	N.	32	..	59	38	31	—	Bright

Medical Diary for the ensuing Week.

Monday, November 27.

ST. BARTHOLOMEW'S HOSPITAL.—Operations, 1.30 P.M.; and on Tuesday, Wednesday, Friday, and Saturday at the same hour.
ST. MARK'S HOSPITAL.—Operations, 2 P.M.; Tuesday, 2.30 P.M.
ST. THOMAS'S HOSPITAL.—Ophthalmic Operations, 2.30 P.M.; Friday, 2 P.M.
ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations daily at 10 A.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1.30 P.M.; and each day at the same hour.
CHELSEA HOSPITAL FOR WOMEN.—Operations, 2 P.M.; Thursday, 2 P.M.
HOSPITAL FOR WOMEN, SOHO-SQUARE.—Operations, 2 P.M.; and on Thursday at the same hour.
METROPOLITAN FREE HOSPITAL.—Operations, 2 P.M.
ROYAL ORTHOPÆDIC HOSPITAL.—Operations, 2 P.M.
CENTRAL LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M., and each day in the week at the same hour.
UNIVERSITY COLLEGE HOSPITAL. Ear and Throat Department, 9 A.M.; Thursday, 9 A.M. Eye Department, 2 P.M.
ROYAL EYE HOSPITAL, SOUTHWARK.—Hour of attendance, 2 P.M., and other days at the same hour. Operations daily.
LONDON POST-GRADUATE COURSE.—Royal London Ophthalmic Hospital, Moorfields: 1 P.M., Mr. A. S. Morton: Ocular Injuries.
THROAT HOSPITAL (Golden-sq.).—5 P.M. Lecture by Dr. N. Wolfenden.
ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-sq., W.C.)—5.30 P.M. Dr. Morgan Dockrell: Pustular Diseases of the Skin.
MEDICAL SOCIETY OF LONDON.—8.30 P.M. Clinical Evening. Dr. Beevor: Case of Syringomyelia.—Sir Hugh Beevor: Case of Obliteration of Superior Vena Cava.—Mr. Hurry Fenwick: Case of Removal of Hydatid Cyst of the Bladder.—Mr. Sheild: Sequel of a case of Remarkable Congenital Tumour in an Infant.—Mr. B. Squire: Case of Enlarged Bloodvessels of the Skin of the Face Obliterated without Scars by Electrolysis.—Mr. Lockwood: (1) Case after Operation for Dupuytren's Contraction of the Palmar Fascia; (2) Case after Excision of Diffuse Lipomata of the Neck.—Dr. Pasteur: Case of Striæ Atrophicæ.

Tuesday, November 28.

GUY'S HOSPITAL.—Operations, 1.30 P.M., and on Friday at the same hour. Ophthalmic Operations on Monday at 1.30 and Thursday at 2 P.M.
CANCER HOSPITAL, BROMPTON.—Operations, 2 P.M.; Saturday, 2 P.M.
WESTMINSTER HOSPITAL.—Operations, 2 P.M.
WEST LONDON HOSPITAL.—Operations, 2.30 P.M.
UNIVERSITY COLLEGE HOSPITAL.—Operations, 2 P.M. Skin Department, 1.45; Saturday, 9.15.
ST. MARY'S HOSPITAL.—Operations, 1.30 P.M. Consultations, Monday, 2.30 P.M. Skin Department, Monday and Thursday, 9.30 A.M. Throat Department, Tuesdays and Fridays, 1.30 P.M. Electrotherapeutics, same day, 2 P.M.
LONDON POST-GRADUATE COURSE.—Hospital for Skin Diseases, Blackfriars: 4 P.M., Dr. Payne: Psoriasis.—Bethlem Hospital: 2 P.M., Dr. Corner: General Paralysis of the Insane.
ROYAL MEDICAL AND CHIRURGICAL SOCIETY.—Dr. Dawson Williams: A case of False Disseminated Sclerosis due to Measles, with Remarks on the Occurrence of certain Widespread Nervous Disorders after this and other Infectious Diseases.—Dr. W. A. Hollis: On a Disseminated Fibrosis of the Kidney found in cases of Infective Endocarditis, Aortitis and Allied Disease; its Pathological Significance and Chief Clinical Features.

Wednesday, November 29.

KING'S COLLEGE HOSPITAL.—Operations, 2 P.M.; Thursdays and Fridays at the same hour.
NATIONAL ORTHOPÆDIC HOSPITAL.—Operations, 10 A.M.
MIDDLESEX HOSPITAL.—Operations, 1.30 P.M.; Saturdays, 2 P.M. Obstetrical Operations, Thursdays, 2 P.M.
CHARING-CROSS HOSPITAL.—Operations, 3 P.M., and on Thursday and Friday at the same hour.
ST. THOMAS'S HOSPITAL.—Operations, 1.30 P.M.; Saturday, same hour.
LONDON HOSPITAL.—Operations, 2 P.M.; Thursday and Saturday, same hour.
ST. PETER'S HOSPITAL, COVENT-GARDEN.—Operations, 2 P.M.
SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN.—Operations, 2.30 P.M.
GREAT NORTHERN CENTRAL HOSPITAL.—Operations, 2 P.M.
UNIVERSITY COLLEGE HOSPITAL.—Operations, 1.30 P.M. Dental Department, 9.30 A.M. Eye Department, 2 P.M.
ROYAL FREE HOSPITAL.—Operations, 2 P.M., and on Saturday.
CHILDREN'S HOSPITAL, GREAT ORMOND-STREET.—Operations, 9.30 A.M. Surgical Visits on Wednesday and Saturday at 9.15 A.M.
LONDON POST-GRADUATE COURSE.—Hospital for Consumption, Brompton: 4 P.M., Dr. C. Theodore Williams: Bronchial Asthma—Royal London Ophthalmic Hospital, Moorfields: 2 P.M., Mr. W. Lang: Squint.
THROAT HOSPITAL (Golden-sq.).—5 P.M. Mr. F. G. Harvey: Syphilitic Laryngitis.

Thursday, November 30.

ST. GEORGE'S HOSPITAL.—Operations, 1 P.M. Surgical Consultations, Wednesday, 1.30 P.M. Ophthalmic Operations, Friday, 1.30 P.M.
UNIVERSITY COLLEGE HOSPITAL.—Operations, 2 P.M. Ear and Throat Department, 9 A.M. Eye Department, 2 P.M.
NORTH-WEST LONDON HOSPITAL (Kentish Town-rd.).—Operations, 3 P.M.
LONDON POST-GRADUATE COURSE.—Hospital for Sick Children, Gt. Ormond-st.: 3.30 P.M., Dr. F. Batten: Tuberculosis.—National Hospital for the Paralysed and Epileptic: 2 P.M., Mr. V. Horsley: The Surgery of the Nervous System.—London Throat Hospital (Gt. Portland-st.): 8 P.M., Dr. E. Law: Demonstration of Cases.—Central London Sick Asylum, Cleveland-street, W.: 5.30 P.M., Mr. A. Pearce Gould: Modern Treatment of Common Fractures.

Friday, December 1.

UNIVERSITY COLLEGE HOSPITAL.—Eye Department, 2 P.M.
LONDON POST-GRADUATE COURSE.—Hospital for Consumption, Brompton: 4 P.M., Dr. C. Theodore Williams: Emphysema.
WEST KENT MEDICO-CHIRURGICAL SOCIETY (Greenwich).—Clinical Evening.
WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—8 P.M. Clinical Meeting. The President (Dr. Donald W. C. Hood): Notes on a case of Glanders. Dr. H. W. Marett Tims: (1) Microscopical Section from a case of Xanthoma Diabeticorum; (2) Case of Colloid Milium; (3) Case of Diffuse Symmetrical Scleroderma.—Mr. William Steer: Case of Raynaud's Disease.—Mr. Leonard A. Bidwell: (1) Case of Ostitis of Lower End of Humerus; (2) Cases of Lupus Excised and Skin Grafted. Other cases by Dr. Abraham and Dr. Gardner, and Messrs. F. Swinford Edwards and Stephen Paget.

Saturday, December 2.

UNIVERSITY COLLEGE HOSPITAL.—Skin Department, 9.15 A.M.
LONDON POST-GRADUATE COURSE.—Bethlem Hospital: 11 A.M., Dr. Percy Smith: Lunacy Law.

Notes, Short Comments & Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side only of the paper.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Publisher."*

We cannot undertake to return MSS. not used.

A FINE POINT IN THE SALE OF A PRACTICE.

the course of an action before Mr. Justice Day at the Nisi Prius Court, Manchester, lately, an important question arose as to the duty of the plaintiff, who had sold his practice to the defendant for £250, and his heirs, to reserve his house for ten years from sale or letting to a medical man who had sold his practice to the defendant. The defendant argued that the plaintiff had agreed to this; but he refused to sign the agreement. He was willing to promise not to practise within ten miles of Colne, and not to sell his house so for five years or during his lifetime, but he was not willing to bind his successors. The judge decided that it was unreasonable to expect the plaintiff to bind his successors in title for a lengthened period, and that the plaintiff had not consented so to bind himself. He gave judgment for the plaintiff, with costs, and directed that he should give an undertaking in writing not to sell or let his house to a medical man for four years, by which time, his lordship thought, any medical demand would have been eliminated.

B. A. R.—1. Mr. H. K. Lewis publishes a series of charts of the kind required.—2. We cannot recommend any such work.

"THE TREATMENT OF FUNCTIONAL APHONIA."

To the Editors of THE LANCET.

SIRS,—May I suggest to your contributor "Perplexed" the trial of a few applications of statical electricity to the throat, on each side of the thyroid cartilage, and on a level with the vocal cords?

I am, Sirs, yours truly,

Bath, November, 1893. O. H.

QUACK ADVERTISEMENTS.

REVELATIONS which have recently appeared in the public press may serve to open the eyes of those who delight in dealing with secret proprietary remedies and believe in outrageous claims and certificates of impossible cures. A good story bearing on this point appears in the *Canada Lancet* for October of this year, and the same anecdote appeared in the *Medical News*. A medical humourist spent considerable sums in advertising in "reputable medical journals of the United States" a series of preparations, trade-marked and patented, of the most astonishing qualities and powers. For the anti-vaccinationists and the aristocracy "Jennerine" possessed a charm; it was of spontaneous production in a blooded cow of long pedigree, but for many generations had been carried through the human royal family of England, acquiring thereby great intensity and nobility. Transmission of the virus and inoculation could also be effected by telegraph "over many miles of wire." Of "Pasteurine," the universal microbicide, the formula was published, though the name was trade-marked and "other dealers are warned" &c. And this is the formula: Nitrogen, 1 volume; carbonic acid gas, pure, unhydrated, 2 volumes; permanganate of potash, 2 parts by weight; pure oxygen, without admixture, 1 volume; pure carbon in crystallised form, 1 part by weight. "Consumptine" was guaranteed a sure cure for consumption. As regards "Croupine," the physician required especial teaching and drilling in its application, to prevent the digestion of the membrane of the patient's throat while being swallowed. "Dyspepsine" and "Cancerine" were guaranteed of absolutely unfailing power. "Ostrichine" enabled one to eat mince pie and railroad sandwiches with impunity. "Brainerine" needed only its name to recommend it. "Brains are scarce just now," said the advertisement, "and for this reason our supply for a few years will be limited. Physicians requiring this article for their personal needs or those of their patients will please apply with subscription at once." Now for the result of these extraordinary advertisements. To the address of the "Nineteenth Century Therapeutical Company" from every part of the United States came thousands of serious letters from physicians—literally thousands—requesting samples, ordering supplies, and making inquiries as to the applicability of these remedies to ailments described in detail. The Editor of the *Canada Lancet* remarks as follows on the above narrative: "We venture to assert that in no other country in the world could so huge a practical joke have been played upon the profession. We have always thought the laity of the United States the most credulous of any civilised country (witness the success of homœopathy), but now it would appear that a large portion of the profession is equally gullible."

"TREATMENT OF DIPHTHERIA BY INSUFFLATION AND TABLOIDS OF SULPHITE OF MAGNESIUM."

To the Editors of THE LANCET.

SIRS,—Having been applied to by practitioners in various parts of the country for particulars of my method of treatment, I should be obliged if you would allow me to state that, as, in my opinion, the great point is to bring the sulphite into direct contact with the diseased surface, it is not of much consequence whether this is done by insufflation or gargling. My usual method is, in patients of an age to efficiently gargle, to order a gargle (half an ounce to the eight ounces) to be used hourly; after gargling, half an ounce to be swallowed slowly. This I supplement by either insufflating about half a drachm of the powder or tipping it off the end of a spatula or handle of a teaspoon three times a day; in young children or very serious cases I apply the dry powder in one or other of the above methods hourly. When all membrane has disappeared I continue the remedy every four hours for some days, giving, of course, tonics and stimulants as well. The harmlessness of the drug is one of its greatest advantages. It is not very soluble; the gargle should therefore be kept on its side and frequently shaken, or, better still, made fresh each time. A mixture, not solution, is the best gargle. I may add that, although useful in the scarlet fever sore-throat, I have not found it of service in other forms of tonsillitis.

Hoping that the gentlemen who have written to me will kindly consider this as a reply to their letters,—I am, Sirs, yours faithfully,

Bradford, November, 1893. W. GILCHRIST BURNIE.

BENEFIT SOCIETIES AND THE NEW M.D.

Mr. Veryman Trimming, secretary of the Magnetic and Botanic School of Safe Medicine, writes a letter to the editor of the *Durham Chronicle* rejoicing over the appointment of Mr. Steel—we beg Mr. Trimming's pardon, "Dr." Steel—to fill the office of medical attendant to the members of the Local Rechabite Lodge, and over the general indications that the public are beginning to see the value of the Magnetic and Botanic System of *Safe* Medicine and to discard all the false lights of the regular system. We advise that any information with regard to such appointments should be sent without delay to the President of the General Medical Council.

Mr. Charles Lathbury is thanked for his communication. We hope he will succeed.

THE SUPPLY OF DRUGS FROM INDIA.

IN an article upon "Experimental Gardening in the North-Western Provinces" the *Pioneer Mail* of the 2nd inst. calls attention to the fact that the Government of India is supplied with certain drugs grown in the Botanical Gardens, and to the important results which this may lead to in the future. At present hyoscyamus, taraxacum, and jalap are supplied to the Medical Department in India at lower prices than these articles can be procured elsewhere. Owing to the great range of climate, elevation, soil, and other conditions, the materia medica of botany in India abounds in almost infinite variety, and as there are annually imported into that country drugs to the value of 48 lakhs of rupees it is considered that India offers a field for private enterprise in this respect; indeed, it is thought that an export trade in drugs may one day be carried on with England and the Continent. A trade in Indian podophyllin might, as suggested in Dr. Watts's "Dictionary of Economic Products," be established in the Simla district and other parts of the Himalayas, of which the plant is a native.

Mr. A. Wilson, L.R.C.P. & S. Edin.—A model of the brain could be obtained through instrument-makers; but probably a brain hardened in spirit or in 1-in-20 carbolic acid solution would be more satisfactory and much cheaper. The best illustrations of the nervous system are to be found in the [tenth edition of Quain's Anatomy (vol. iii., part 1), published] by Longmans. For diagrams these would have to be copied on a larger scale.

Mr. Harry Cousins.—We cannot give the information asked. We should doubt the desirability of medical men being shareholders in such a scheme.

"LOCOMOTOR ATAXY TREATED BY PHOSPHATIC INJECTIONS."

To the Editors of THE LANCET.

SIRS,—In consequence of the account published in THE LANCET of Nov. 18th of a case of locomotor ataxy treated by me by subcutaneous injections of "phosphate de soude" in combination, I have received numerous inquiries as to the preparation of this compound and how it is used. Tabloids have been prepared by Messrs. Burroughs and Wellcome according to the prescription submitted to them by me. Some time previous to drawing the attention of the medical profession to the matter I had instructed the firm to prepare these tabloids. I have pleasure in stating that several medical men have ordered them and tried them in similar cases to those to which I referred, and, with one exception, all have given satisfactory results. Of course all cases are not suitable for the treatment I allude to, but from my experience of the extensive practice in Belgium, of which I have made a practical and careful study there in consultation with the authorities, I state emphatically that in a certain class of cases where locomotor ataxy exists, as well as in some other forms of mental disorders, absolute cures have taken place, and in cases in which the prognosis appeared grave and unfavourable. The tabloids are the exact prescription used on the Continent and introduced by me into England.

I am, Sirs, your obedient servant,

Devonshire-street, W., Nov. 22nd, 1893. FORBES WINSLOW.

To the Editors of THE LANCET.

SIRS,—There was a very interesting contribution in THE LANCET of Nov. 18th on the treatment of locomotor ataxy by phosphatic injections. Will Dr. Forbes Winslow kindly inform me on the following points—viz.:—(1) The strength of the solution; (2) the kind of syringe used; (3) the quantity injected each time; (4) the frequency of the injections; (5) at what distance from the vertebral spines the injections should be made; (6) how deep the syringe should be introduced; and (7) if any extra precautions in the management of the case should be taken. Apologising for the trouble I am putting Dr. Forbes Winslow to in giving these rather important details, I am, Sirs, very truly yours,

Bath, November, 1893. O. H.

"RÖTHELN AND SCARLET FEVER."

To the Editors of THE LANCET.

SIRS,—I think it a great pity that those who criticise do not advance some views of their own which may help to elucidate problems that every now and then present themselves to our notice. That there is a difficulty in the diagnosis of röthela and scarlet fever is shown by the fact that patients are from time to time sent into the fever hospital with supposed scarlet fever and yet contract it after admission, while persons are reported to have a second attack of it within a few weeks after the first. The weak points in Mr. Cuthbert's argument are (1) the assumed correctness of his own diagnosis and (2) his assumption that I put forward one symptom by itself as an infallible index of what the disease is. He will no doubt be more satisfied than he appears to be at the present time when I tell him that it was Dr. Crocker, physician at the University College Hospital, who told me in a short conversation I had with him on the subject that he considered one week as the shortest initial fever in scarlet fever.

I am, Sirs, yours truly,

Surbiton, November, 1893. F. P. ATKINSON.

"CHOLERA TESTS AS USED BY DR. KLEIN, AND WHICH DO NOT FAIL IF THE COMMA BACILLUS IS PRESENT."

THE following process for the detection of the comma bacillus in fecal deposits has appeared in the *St. Bartholomew's Hospital Journal*:—1. Examination of fresh stools or contents of ilium (*sic*): if flakes in stool, ascertain whether they are composed of shed epithelium or of lymph corpuscles; the former is the rule in Asiatic cholera. Notice whether there are any motile bacilli, which in shape are commas or spirils; their movements are not straight, but like a screw moving. 2. Examination of stained specimens: make film specimens on cover-glasses; dry and stain in alcoholic gentian-violet; search for comma-shaped or spiril bacilli. In typical rapidly fatal cases of true Asiatic cholera they occur in flakes in great crowds and generally in linear arrangement: in some places almost to the exclusion of other bacteria. 3. Inoculate with a trace of the flakes, test as containing peptone (1·0 per cent.) and salt (0·5 per cent.), in water all previously sterilised. After six hours'—better after ten or twelve hours'—incubation at 37° C. there is distinct, though slight, turbidity, due to the multiplication of choleraic comma bacilli. Take off from the top layers a loopful and make with this inoculations of a peptone-tube, and from this dilution make cultivations in other peptone-tubes and on the surface of agar. After twenty-four hours pure cultivations of the choleraic comma bacilli are thus easily obtained. The peptone cultivations, if pure, or nearly so, give, on the addition of one or two drops of pure sulphuric acid, a characteristic rose-pink colouration, due to nitrates and indol. This reaction is shown after ten to sixteen hours' incubation of the peptone cultures at 37° C. 4. Gelatine plate cultivations are made with a particle of the flakes; after two or three days the characteristic colonies of the choleraic comma bacilli will be found if the case is cholera Asiatica; but this latter method, besides taking more time, is only successful if the flakes or stool originally contain a fair number of comma bacilli.

A.—B.'s conduct was apparently of the most generous and neighbourly kind to A. Is it quite certain that he rightly construes A.'s motive in sending for another doctor from a town five miles distant to do the remainder of his work? It might be to save B. trouble, and that he had some personal claim on this "other doctor." It is wrong to assume lower motives without evidence that forbids credit for the opposite.

INFLUENZA.

To the Editors of THE LANCET.

SIRS,—I notice in an article on influenza in THE LANCET of Nov. 18th that it is mentioned that several of the mills have had difficulty in keeping moving on account of the number of workpeople ill. I thought it possible, in case the subject of the spread of influenza should be taken up again next week, that you might like some farther particulars of the epidemic in Blackburn. I addressed a circular on Nov. 9th asking for some particulars concerning the number of workpeople who had had influenza during the three weeks previously. As a result, I found that among 16,978 work people there had been 1447 cases in the three weeks, or 8·5 per cent. If the epidemic affected the rest of the population in an equal degree, there would have been about 10,000 cases in the town at the same time. The epidemic is of an extremely mild character, as is proved by the fact that there have been only eleven deaths during the last six weeks. The infectiousness, however, seems to be as marked as ever. It seems to have spread through households even more quickly than in former years. The inquiry was directed, to a great extent, to finding out whether any special branches of the cotton trade were principally affected. The attack-rate varied in these branches from 11·5 per cent. to 7 per cent., and was in direct proportion to the closeness of aggregation.

I am, Sirs, yours faithfully,

JAMES WHEATLEY, M.D., Medical Officer of Health.

Blackburn, Nov. 20th, 1893.

ERRATA.—In our leading article on Dr. Barry's report on Enteric Fever in the Tees Valley the names of two urban sanitary districts were, on p. 1199, twelfth line from the bottom of the first column, misspelled. "Easton and Kirkleheaton" should read *Eston and Kirkleatham*.

During the week marked copies of the following newspapers have been received:—*Market Harborough Advertiser, Western Express, Medical Record (New York), Birmingham Post, Lightning, Evening Post (New York), Bradford Daily Argus, Dundee Advertiser, Wolverhampton Chronicle, Liverpool Daily Post, Bristol Mercury, Yorkshire Post, Mining Journal, Local Government Chronicle, Reading Mercury, Leeds Mercury, Weekly Free Press and Aberdeen Herald, West Middlesex Standard, Hertfordshire Mercury, City Press, Yorkshire Herald, Local Government Journal, Guy's Hospital Gazette, Surrey Advertiser, Portsmouth Evening Mail, Devizes Gazette, The Architect, Builder, Public Opinion, Oldham Standard, Hexham Courant, Lynn News, Sunday Times, Times of India, Pioneer Mail, Essex Telegraph, Jarrow Express, Torquay Directory, Walton Gazette, Scotsman, Banffshire Journal, Coatbridge Express, West Briton, Isle of Wight Observer, Teignmouth Gazette, Royal Cornwall Gazette, Alnwick Gazette, Kendal and County News, Lynn Advertiser, The Anglo-American Paris and Nice Gazette, Citizen, &c. &c.*

Communications, Letters &c. have been received from—

A.—Dr. F. H. Alderson, Hammersmith; Dr. F. P. Atkinson, Surbiton; Messrs. Arthur and Co., London; *Anglo American*, Editor of, Paris; Amines Syndicate, Limited, London.

B.—Dr. Lucas Benham, London; Dr. W. W. Baldwin, Florence; Dr. Robert Boxall, London; Dr. F A. Bond, Tunbridge Wells; Dr. R. Broadbent, Leicester; Mr. W. Gilchrist Burnie, Bradford; Mr. C. Knox Bond, London; Mr. W. Birtwhistle, Skipton; Mr. T. B. Browne, London; Mr. H. Bindon, Bradford-on-Avon; Miss Minnie Bertram-Jones, Tunbridge Wells; British Medical Temperance Association, Enfield, Hon. Secretary of; Bradford Small-pox Hospital, Medical Officer of; B. B., London; Beta, London.

C.—Dr. C. H. Cattle, Nottingham; Dr. F. Clemow, Cronstadt; Dr. Harry Campbell, London; Dr. P. J. Cook, Brighton; Mr. S. Crossley, Blackburn; Mr. W. H. Clover, Dublin; Mr. A. Cutfield, Ross; Chester General Infirmary, Secretary of; Current Literature Publishing Co., New York, Manager of; Climax, London; Cantab, London.

D.—Dr. Archibald Donald, Manchester; Dr. A. Crosbee Dixey, Halstead; Mr. A. D. Deane, London; Mr. J Douglas, London; Mr. Richard Dawson, Worthing; Messrs. Duncan, Flockhart and Co., Edinburgh; Dudley Dispensary, Hon. Secretary of.

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